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ABSTRACT

Presented is a general discussion of outing activities and winter sports. Standards in sports for girls and women are detailed, as is the statement of beliefs of the Division for Girls and Women's Sports (DGWS). Specific articles on camping, hiking, and environmental education are included in the outing section. Articles on skating, skiing, and accident prevention are included in the winter sports section. Bibliographies are presented for each section. (BRB)

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Outing Activities and Winter Sports GUIDE

JULY 1973 – JULY 1975

With Official Rules

Editors

Mildred Lemen, *Outing Activities*

Jo Washburn, *Winter Sports*

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THE DIVISION FOR GIRLS AND WOMEN'S SPORTS

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DIVISION FOR GIRLS AND WOMEN'S SPORTS

The Division for Girls and Women's Sports is a nonprofit educational organization designed to serve the needs and interests of administrators, teachers, leaders, and participants in sports programs for girls and women. It is one of eight divisions of the American Association for Health, Physical Education and Recreation. Active members of the Division are women members of the American Association for Health, Physical Education, and Recreation who are interested in sports for girls and women and who participate in the work of the Division. These women are professional leaders in schools, colleges, community centers, industrial plants, military services, public and private clubs, and agencies.

The purpose of the Division for Girls and Women's Sports is to foster the development of sports programs for the enrichment of the life of the participant.

The Division for Girls and Women's Sports attempts to promote desirable sports programs through:

1. Formulating and publicizing guiding principles and standards for the administrator, leader, official, and player.
2. Publishing and interpreting rules governing sports for girls and women.
3. Providing the means for training, evaluating, and rating of officials.
4. Disseminating information on the conduct of girls and women's sports.
5. Stimulating, evaluating and disseminating research in the field of girls and women's sports.
6. Cooperating with allied groups interested in girls and women's sports in order to formulate policies and rules that affect the conduct of women's sports.
7. Providing opportunities for the development of leadership among girls and women for the conduct of their sports programs.

SPORTS GUIDES AND OFFICIAL RULES COMMITTEE INTEREST INDICATOR

The SGOR Committee is endeavoring to broaden its base of personnel and to strengthen its services to *Guide* readers. The purpose of this form is to offer readers an opportunity to join us in meeting this need. Please complete this form and send it to the SGOR Associate Chairman-elect, whose name and address appear on page 16.

Name_____

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3. Would you consider submitting an article to a Guide Committee as a prospective author? _____Yes _____No
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   _____
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*You may serve on only one Sport Guide Committee at a time.

DGWS STATEMENT OF BELIEFS

We believe that opportunities for instruction and participation in sports should be included in the educational experiences of every girl. Sports are an integral part of the culture in which we live. Sports skills and sports participation are valuable social and recreational tools which may be used to enrich the lives of women in our society.

We believe that sports opportunities at all levels of skill should be available to girls and women who wish to take advantage of these experiences. Competition and cooperation may be demonstrated in all sports programs although the type and intensity of the competition will vary with the degree or level of skill of the participants. An understanding of the relationship between competition and cooperation and of how to utilize both within the accepted framework of our society is one of the desirable outcomes of sports participation.

We believe in the importance of physical activity in the maintenance of the general health of the participant.

We believe that participation in sports contributes to the development of self-confidence and to the establishment of desirable interpersonal relations.

For these reasons, *we believe* that girls and women of all ages should be provided with comprehensive school and community programs of sports and recreation. In addition, they should be strongly and actively encouraged to take part in such programs.

PROGRAM

We believe that sports programs for girls and women should be broad, varied, and planned for participants at differing levels of skill. There should be full awareness of the wide span of individual differences so that all types, ages, and skill levels are considered in the planning of sports programs. In conducting the various phases of sports programs, principles must guide action. These principles should be based on the latest and soundest knowledge regarding

1. Growth and development factors
2. Motor learning
3. Social and individual maturation and adjustment
4. The values of sports participation as recognized in our culture.

Elementary Schools (grades 1-6)

We believe in planned, comprehensive, and balanced programs of physical education for every girl in the elementary program. These

should provide experiences in basic movements – for example, skipping and simple dance steps, bending, reaching, and climbing – and in a wide variety of activities which require basic sport skills such as catching, throwing, batting, and kicking.

We believe that intramural sports experiences in appropriately modified sports activities should supplement an instructional program for girls in grades 4, 5, and 6, and that in most cases these experiences will be sufficiently stimulating and competitive for the highly skilled girl. We believe extramural sports activities, if included in the upper elementary grades, should be limited to occasional play days (sports groups or teams composed of representatives from several schools or units), sports days, and invitational events.

Secondary Schools (grades 7-12)

We believe that in secondary schools a program of intramural and extramural participation should be arranged to augment a sound and comprehensive instructional program in physical education for all girls. Extramural programs should be organized to supplement broad instructional and intramural programs provided sufficient time, facilities, and personnel are available for these additional programs.

Colleges and Universities

We believe that college and university instructional programs should go beyond those activities usually included in the high school program. There should be opportunities to explore and develop skills in a variety of activities, with emphasis on individual sports. It is desirable that opportunities for extramural experiences beyond the intramural program be accessible to the highly skilled young women who wish these opportunities.

Forms of Competition

Intramural competition is sports competition in which all participants are identified with the same school, community center, club, organization, institution, or industry, or are residents of a designated small neighborhood or community.

Extramural competition is a plan of sports competition in which participants from two or more schools, community centers, clubs, organizations, institutions, industries, or neighborhoods compete. The forms of extramural competition include

1. Sports days – school or sports group participates as a unit
2. Telegraphic meets – results are compared by wire or mail
3. Invitational events – symposiums, games, or matches to which a school or sports group invites one or more teams or individuals to participate.
4. Interscholastic, intercollegiate, or interagency programs – groups which are trained and coached play a series of scheduled games

and/or tournaments with like teams from other schools, cities, or organizations.

International Competition involves players from different nations and provides sports experiences for individuals or groups with exceptional ability and emotional maturity. This type of competition under some conditions could include secondary school girls, but usually it is planned for more mature participants.

Corecreational activities are designed to give boys and girls opportunities to participate on the same team against a team of like composition, provided the activities do not involve body contact. The basis for formation of teams should be to promote good team play. While positive experiences for the exceptional girl competitor may occur through participation in boys or men's competitive groups, these instances are rare and should be judged acceptable only as an interim procedure for use until girls programs can be initiated.

ADMINISTRATION

We believe that certain *safeguards* should be provided to protect the health and well-being of participants. Adequate health and insurance protection should be secured by the institution. First aid services and emergency medical care should be available during all scheduled interscholastic sports events. Qualified professional leaders should ensure a proper period for conditioning of players, a safe environment including equipment and facilities, a schedule with a limited number of games, and similar measures.

We believe that sports *officiating* should be the responsibility of those who know and use DGWS approved rules. Officials should hold current ratings in those sports in which ratings are given.

We believe that the entire *financing* of girls and women's sports programs should be included in the total school budget. It is suggested that income be handled as a regular school income item.

We believe that the *scheduling* of sports activities for girls and women should be in accordance with their needs and that their schedule should not be required to conform to a league schedule established for boys and men's sports.

We believe that excellence of achievement should be given *recognition* and that the intrinsic values which accrue from the pursuit of excellence are of primary importance. We believe that, when awards are given, they should be inexpensive tokens of a symbolic type, such as ribbons, letters, and small pins.

We believe that expert teaching and quality programs generate their own best *public relations.* It is suggested that an effective plan be developed for interpreting the values of the sports program to parents, teachers in other fields, and interested members of the

school or college community, including the press. A procedure which has proved successful is to invite key groups to a selection of demonstrations and sports events at different levels, so that they may see effective programs in action.

LEADERSHIP

We believe that good leadership is essential to the desirable conduct of the sports program. The qualified leader meets the standards set by the profession, including an understanding of (1) the place and purpose of sports in education, (2) the growth and development of children and youth, (3) the effects of exercise on the human organism, (4) first aid and accident prevention, (5) understanding of specific skills, and (6) sound teaching methods. Personal experience in organized extramural competition is desirable for the young woman planning to become a leader or teacher of women's sports. The leader should demonstrate personal integrity and a primary concern for the welfare of the participant.

POLICY-MAKING

And finally, we believe that all leaders, teachers, and coaches of girls and women's sports should be encouraged to take an active part in the policy decisions which affect planning, organizing, and conducting sports programs for girls and women. Leaders should make sure that qualified women are appointed to the governing sports bodies at all levels – local, state, national, and international – to ensure that programs are in the best interest of those who participate.

STANDARDS IN SPORTS FOR GIRLS AND WOMEN

Standards in sports activities for girls and women should be based upon the following:

1. Sports activities for girls and women should be taught, coached, and officiated by qualified women whenever and wherever possible.
2. Programs should provide every girl with a wide variety of activities.
3. The results of competition should be judged in terms of *benefits to the participants* rather than by the winning of championships or the athletic or commercial advantage to schools or organizations.

Health and Safety Standards for Players

Careful supervision of the health of all players must be provided by–

1. An examination by a qualified physician
2. Written permission by a qualified physician after serious illness or injury
3. Removal of players when they are injured or overfatigued or show signs of emotional instability
4. A healthful, safe, and sanitary environment for sports activity
5. Limitations of competition to a geographical area which will permit players to return at reasonable hours; provision of safe transportation.

General Policies

1. Select the members of all teams so that they play against those of approximately the same ability and maturity.
2. Arrange the schedule of games and practices so as not to place demands on the team or player which would jeopardize the educational objectives of the comprehensive sports program.
3. Discourage any girl from practicing with, or playing with, a team for more than one group while competing in that sport during the same sport season.
4. Promote social events in connection with all forms of competition.

SOURCES OF INFORMATION AND SERVICE

The various services are offered by committees. All requests for information of services should be addressed to the chairman of the committee into whose field of work the inquiry falls. Inquiries which cannot be readily classified should be addressed to the DGWS vice-president.

ASSOCIATION FOR INTERCOLLEGIATE ATHLETICS FOR WOMEN–Sponsors national tournaments and establishes procedures for regional development and for sanctioning intercollegiate events.
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Historian: DIANA POUND, 10101 Ivy Ave., Vienna, Va. 22180

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Camping by Snowmobile

SUSAN E. HICKS

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In recent years snowmobiling has become one of America's most popular, if not controversial, forms of winter recreation. This article is not intended to reflect a "for or against" view on snowmobiling, but rather to recognize its present and potential usage in winter recreation and to encourage safe snowmobile camping.

Snowmobiles have opened the possibility of winter camping to many individuals – small family groups, clubs, and school groups. Snowmobiling not only demands that the camper know the basics of winter camping, but also requires a knowledge of the basic skills and safety rules involved when traveling and camping by snowmobile.

When planning a camping trip by snowmobile, the following factors should be considered:

1. How many people will be camping? How many snowmobiles are needed? (Two snowmobiles is the minimal number for any trip!)
2. How much experience has the group had in winter camping?
3. How much experience has the group had in operating and repairing snowmobiles?
4. Under what conditions are the snowmobiles to be used? Are they equipped for all possible emergencies? In good mechanical condition?
5. What trails and potential campsights are in your area?

By consulting your local conservation department you may obtain information on state laws regarding snowmobile use and maps of area trails. Snowmobile clubs or individuals in your area will be very willing to help you plan your trip, and are probably the people best informed on what equipment you will need and conditions of area trails.

After considering the above factors, determining your trail and campsight, and deciding the length of your trip, you must be sure that all members of the camping group know the following basics of handling a snowmobile:

1. Starting the machine in normal and extremely cold temperatures.

2. Normal riding positions, negotiating turns, going uphill and downhill safely.
3. Traveling through woods or across lakes safely.
4. Methods for freeing a machine that is stuck.
5. Crossing roads safely, spacing machines during travel, safe speed limits.
6. Operating a machine with a toboggan drag – packing and hitching the toboggan correctly.

Once it has been determined that all trip participants are familiar with the above snowmobiling basics, the snowmobiles must be checked for emergency equipment. Among the items necessary for any trip, be it for two hours or two days, are extra gasoline, pliers, adjustable wrench, spark plug wrench, extra spark plug, drive belt, survival kit, wire, electricians tape, ax, screwdrivers, extra rope and tarp, and of course snowshoes. Other emergency equipment should be included according to recommendations of the local snowmobile club.

Individual gear required will vary with length of trip, location, time of year, and of course individual needs. Each person should definitely have a snowmobile suit with an outer layer that is waterproof, felt-lined boots, sunglasses (two pairs if possible), wind mask, extra gloves, first aid kit, and the additional personal equipment normally used for camping. Be sure that all items are as waterproof as possible!

With the individual campers and snowmobiles equipped, we turn now to the campsite. Here are some general suggestions which may make your winter camping a success:

1. Find an area that is well-sheltered – either on low ground or near a wind break of trees.
2. Use a flat site – but not a lake!
3. Pack down the snow in your campsite area with snowmobiles before pitching camp.
4. Use a self-supporting tent when possible – and anchor it securely!
5. Be sure any lamps or heaters are well ventilated.
6. Do not camp at a site where snow may fall off trees or drift over tents.
7. Use dead lower pine limbs, standing dead trees, or downed trees for firewood.
8. A small, well-sealed can of kerosene may be brought along to help start camp fires.
9. Food should be brought in pre-cut, individual sized portions to facilitate preparation and speed cooking.

Potential campsites should be "scouted" ahead of time – again the local snowmobile club will gladly assist you in gathering information on campsites.

Snowmobiles have opened winter camping areas and opportunities to thousands of people. With proper preparation and knowledgeable use of snowmobiles, winter camping by snowmobile can become an integral part of a family, school, and club recreational program.

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Accident and Injury in Snowmobiling

MERRITT H. STILES

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The snowmobile has demonstrated its usefulness in allowing telephone linesmen to make otherwise almost impossible wintertime repairs; in feeding snowbound stock; and in winter rescue operations where its load-carrying potential is of special value. There have been no significant injuries reported as a result of such use.

The snowmobile injury problem does not arise from use of the machines by professionals, but rather from their alluring and attractive recreational use. When snowmobiles are driven by persons of all ages, with all degrees of experience, and with all too little knowledge of the whims and vagaries of self-propelled vehicles, accidents frequently are the result.

Available reports present an alarming picture, with tragic deaths of persons of all ages.[1] John Marsh, Safety Coordinator for the Maine Department of Inland Fisheries and Game, has stated, "I put about 200,000 hunters into the woods a year and have only 50 accidents. Last season there were about 20,000 snowmobiles registered and there were more than 300 accidents."[2]

Richard W. McLay of the University of Vermont surveyed 63 snowmobile accidents reported to six northern and central Vermont hospitals during the 1968-69 season.[3] Accident categories and special hazards felt to be contributing factors are listed in Table 1. Types of injuries and fracture locations are shown in Table 2. The high incidence of fractures of the spine, usually the result of "jumping" the machine, is of particular interest.

Not only are there many personal-injury accidents with snowmobiles, but damage has been reported to crops, fish, and wildlife. A winter kill of fish in Coon Lake, Wisconsin was traced to a reduction of dissolved oxygen in the water. Heavy snowmobile use had

[1] J. P. Fleming, "Safety." Presented at the International Snowmobile Conference, May 20, 1969, Albany, N.Y.

[2] J. Olsen, "Bad Show Out in the Cold Now," *Sports Illustrated* 32 (March 16, 1970): 28-35.

[3] R. E. McLay and S. E. Chism, "A Snowmobile Accident Study." Presented at the International Snowmobile Conference, May 20, 1969, Albany, N.Y.

compacted the snow over the ice, thus making it opaque. This restricted the amount of sunlight getting to aquatic plants which needed it for photosynthesis and for the production of oxygen.[4]

TABLE 1

SNOWMOBILE ACCIDENT CATEGORIES AND HAZARDS

Accident categories	Number
Collision with another vehicle or object	9
Struck by snowmobile	4
Thrown due to maneuvers	13
Injured in jump	11
Injured by barbed wire or chain	7
Minor injuries	19

Special hazards

Lack of experience	Speed
Equipment not in repair	Thin ice
Climbing over banks	Jumps
Poor visibility	Alcohol
Barbed wire	

TABLE 2

SNOWMOBILE INJURIES

Type	Number
Fractures and dislocations	67
Sprains	14
Lacerations	12
Contusions	8
Foreign body	1
Fatality	1

Fracture locations

Skull and face	4
Clavicle, scapula, ribs, sternum	9
Arm	11
Spine	15
Pelvis	2
Leg	27

[4] "Snowmobiles, A Menace to Fish," *Environmental Action Bulletin* 8 (May 9, 1970): 6.

Snowmobiles have also been reported as doing serious direct damage to winter wheat when they were operated in fields with insufficient snowcover.

Prevention

The National Safety Council has taken the lead in promoting safety in snowmobiling. In addition to gathering records to permit the identification of risk factors, it has published safety education data, recommended regulatory procedures, and, in cooperation with a leading manufacturer, has developed and promoted safety booklets listing Do's and Don'ts of Snowmobiling. (See Table 3.)[5] Legislation

TABLE 3

SNOWMOBILE DO'S AND DON'TS

DON'TS
Don't drive on highway.
Don't drive on railroad right-of-way.
Don't tailgate.
Don't cut across another's right-of-way.
Don't go on ice without knowing thickness.
Don't jump a snowbank without knowing what is on the other side.
Don't be a show-off.
Don't let children operate snowmobile alone.
Don't put hands or feet near track while driving.
Don't travel unfrequented areas alone.
Don't panic.

DO'S
Do obtain operating instructions.
Do learn to know your machine.
Do keep it in good repair.
Do make sure snowmobile is secure when on its trailer.
Do come to a full stop before crossing highway.
Do put one knee on seat for bumpy terrain or sidehill.
Do leave alcohol alone before and when operating a snowmobile.
Do go more slowly if children are aboard.
Do lengthen throttle cable for children's use.
Do have adequate light for nighttime driving.
Do follow marked trails at night.
Do travel with extra caution in unknown areas.
Do carry emergency supplies on safari.

[5] *Northwest Medicine* 71 (Jan. 1972): 29-33.

is needed to include licensing of operators with age limitations, restrictions on horsepower for recreational vehicles, headlight standards, tail-light requirements and regulations for highway use.

Cooperation of volunteer and trade organizations with the National Safety Council in educational and regulatory programs, and in such safety programs as trail marking would materially brighten snowmobiling's future.

There are some encouraging developments in snowmobiling. Professor McLay reported that one snowmobile club in Vermont, with about 85 members, had only one major injury (a broken leg) during the winter of 1968-69. This suggests that participating in a club dedicated to courtesy and safety might make a snowmobiler less accident prone.

Although snowmobiling is currently a very controversial issue, when it is done by knowledgeable and prudent people it can be an exhilarating experience and provide an exciting leisure time activity. Everyone interested in snowmobiling should follow carefully the "Do's and Don'ts."

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European Camping A Go Go

HAROLD AND SHIRLEY RAY

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Do your dreams include Sorrento, Istanbul, London, Barcelona, Rome, or Copenhagen? Ours did, so from June to December 1970, we camped our way across Europe through 21 countries with our 10- and 11-year-old sons. A research sabbatical (History of Sport via Art Forms) was the primary purpose of the sojourn. A camperbus was our home for most of the six months.

Several months of concentrated reading were needed to prepare for the research aspects – locating art museums, galleries, and other interesting and historical sites. Just as important in preplanning, however, were obtaining a passport (well in advance), an International Driver's License, health forms and shots, and the International Camping Carnet. The latter is vital to European camping, since it is a prepaid pass and may be the only admittance to crowded campgrounds; it can be easily obtained from the post office prior to leaving the United States.

From the many resource books on European camping, the ones which were most helpful were *Europa Camping*, Frommer's *$5 A Day* series, and the Michelin *Green Guides*. Although maps available in the United States are useful for general planning, more detailed maps of individual countries are a must. Service stations do *not* provide free maps in Europe; however, good area maps can be bought in bookstores and campstores.

Reputable Traveler's Cheques are accepted generally without problems, but for trips of six months or more, bank letters of credit and/or credit cards are advisable.

Much of our emphasis was necessarily "pictorial," because of the nature of the trip. However, every camper in Europe should take a good camera with which he has practiced and experimented before taking the trip. A back-up camera could be essential. European film is readily available, can be developed there, and European plastic mountings for slides are preferred by some people. In some areas, though, film is very expensive – both American and European. A

traveler might be wise to take his own film from the United States, since he is familiar with it and knows how it works in his camera.

Many students we met were stopping at Youth Hostels and/or campgounds. Some hitchhiked or had motorbikes or cycles, while others rented camping vans or tents. One of the best sources of information for rental or purchase of camping gear and transportation is the April 1971 issue of *Better Camping* – articles by T. C. Slaughter and others.

Costs of camping are usually moderate; i.e. $1.25-$3.00 is an average charge. Campgrounds are frequently not as well organized as those in America. You set up camp any place you choose. There are few picnic tables and no open fires are permitted. There is hot water for showers (some need a coin), and usually for washing dishes (often in a community kitchen-type room), but with few exceptions, water in the lavatories is cold. The adjustment to European toilets is a source of amusement to most campers. It is suggested that you take a couple of rolls of American toilet paper with you. Some campgrounds are minimal; others are quite luxurious and boast swimming pools.

Nearly all have a good campstore which sells souvenirs, guidebooks, maps, camping equipment, and a wide selection of foods from many countries. In one campground in Italy a sign stated the water was "not potable." Otherwise we drank it with no ill effect. Bottled water is available everywhere. (Wine is cheaper.) Ice is not made from pure water, for Europeans do not use ice as we do. Soft drinks will be served cold, but without ice. Many people carry water pillows or jugs which can be frozen overnight at a camp site.

Avoid driving in big cities. Leave your locked car in the campground (in Rome, a fenced and guarded campground) and use public transportation. Traffic and parking are impossible and buses or streetcars are cheap and more fun anyway. Of course, the real fun of camping is traveling the back roads and having the chance to meet the people of an area. The tourist bureaus in major Scandinavian cities will arrange visits to a private home for you.

A final note . . . if you decide to ship a car or camper back, as we did, it would be advisable to accompany the vehicle on the same ship. Many tourists report their cars were ransacked and/or damaged. We were treated well everywhere we went – Yugoslavia, Bulgaria, France, Sweden, etc. You should have the same experience provided you follow the basic rules of camping – and human relations. Remember that people are basically kind. Despite language barriers, courtesy and a smile pay off.

A Float Trip on the Buffalo National River

MILDRED J. LITTLE

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Even though brochures advertising float trips indicate that the trip involves putting you in the water and picking you up at the end, one should not be misled into thinking that the term "float" means to "drift gently or move without effort on the water." On a float trip one usually encounters an intermingling of slow pools, short riffles, and occasional rapids. Whether in a canoe or a jon boat, a great deal of paddling is required on long river trips. But for one who loves nature, whether a photographer, fisherman, canoeist, rockhound, botanist, archeologist, or bird watcher, a float trip is synonomous with adventure. The word "float trip" is also synonymous with the Buffalo River, because this river – considered a scenic waterway and one of the greatest all-around family canoeing rivers in the nation – offers adventure for the amateur and the expert alike.

The Buffalo River, 119 miles from Ponca near its origin to where it meets the White River below Buffalo City, is the last major free-flowing stream in Arkansas. On March 1, 1972, the river was established by law as the Buffalo National River. The bill authorized an appropriation of $12 million for the development of recreational facilities in the area to be administered by the National Park Service.

A 11" x 17" map of the Buffalo River, courtesy of the Arkansas Game and Fish Commission, reveals that the lower half of the river from Highway 65 to Buffalo City (56 miles), can be floated almost anytime except during extreme dry periods. A 30-mile stretch above this, from Highway 123 to Highway 65, is sometimes too low in late summer for good floating, while the upper 33 miles is best floated before May 1.

A popular two-day float trip is the 23-mile stretch from Highway 65 to Highway 14. The remaining 33 miles to the White River is a fairly easy three-day trip. Several fishing and boating concessionaires are located in the vicinity of the Highway 14 bridge and the Buffalo River State Park. An exciting, but relaxing, one-day trip is from this

bridge or from the park to the old mining town of Rush, now a ghost town.

Canoes, jon boats and other float trip equipment may be rented from the concessionaires, or individuals may furnish their own. A small fee is usually charged by the landowner for the privilege of launching and taking out on his property. There is one area where no real access to the river exists for 20 miles.

The water, clear and slightly green with alternate stretches of swift current and deep pools, has riffles over gravel bars and occasional rapids through fields of limestone boulders. The river, with its towering limestone cliffs and willow-lined sharp bends, affords numerous dry gravel bars equally inviting for overnight camping, picnicking, or just relaxing.

Coming from the neighboring state of Texas, our party of six found it convenient to rent three 18-ft. jon boats for a two-day trip from Highway 65 to Highway 14. The jon (also called John) boat has good and bad features. It is somewhat cumbersome as compared to a canoe, but its stability is desirable when carrying gear for an overnight trip. The paddler can move around in the boat with more freedom and, for variety, even paddle while standing. The other five persons in this group had no previous experience in jon boats, nor had they ever been on the Buffalo River. On a previous occasion I had been in a group where five of us had occupied a single jon boat, along with picnic supplies, for an 8-mile and a 10-mile portion of the Buffalo. This arrangement entailed two persons paddling in the stern, one paddling occasionally in the bow, and the other two sitting leisurely in deck chairs. Needless to say, there was more manpower available with this 5-man crew than with our 2-man crew of one paddler in the bow and one in the stern.

After an hour's ride in the back of the concessionaire's pick-up truck, we were deposited 23 miles upstream from our destination. As we loaded our gear, we were careful to center the weight in the boat's mid-section and to put the heavy items on the bottom. Although there was little danger of capsizing at the present water level, we knew there would be numerous riffles and occasional rapids, so we did waterproof our equipment to a certain extent. Cameras were secured in Army surplus ammunition cans, personal gear was stored in five-gallon potato chip cans, sleeping bags were placed in waterproof plastic bags, and the food and cooking equipment were carried in two small footlockers. A footlocker would float in the event of a capsize even though its contents would not remain perfectly dry. I feel that this is a very convenient way to carry supplies and small equipment. We also had several plastic jugs of drinking water and two ice chests. We covered the gear loosely with a tarp, but we did not tie the gear to the boat. Disagreement

exists among the experts on tying a load. I have canoed many rivers in Texas – among them, the Rio Grande through the canyons of Big Bend National Park, and the Guadalupe River – and I prefer not to tie, particularly if the gear is in watertight, floatable containers. We did fasten a 15-ft. rope to both the bow and to the stern to aid in walking the boat through shallow spots or lining through rapids.

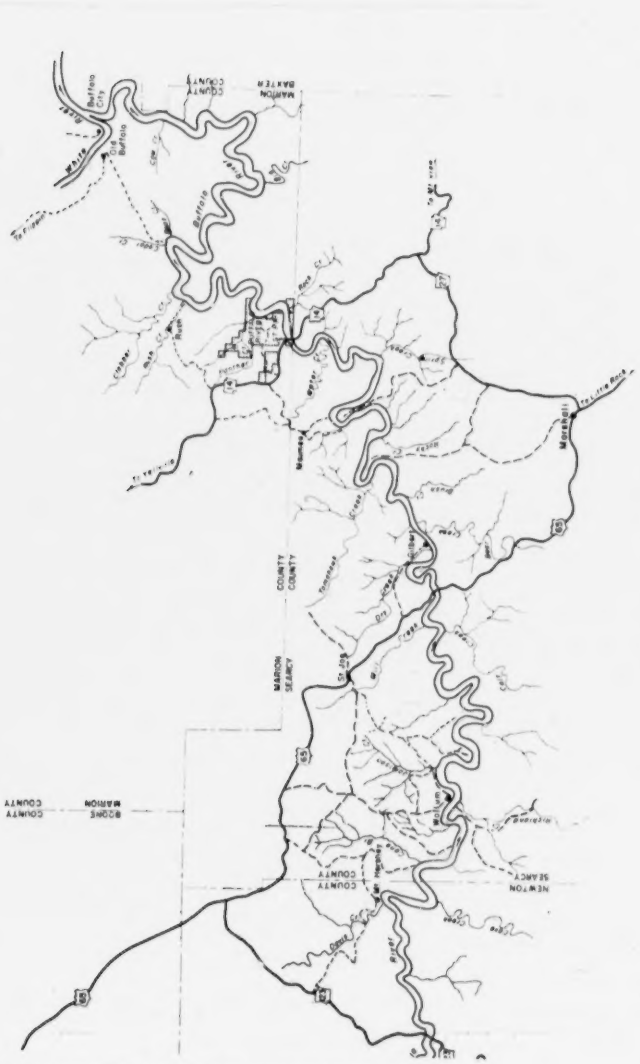
We had a delightful day on the river, floating from 9:00 a.m. until 5:30 p.m. – with several stops along the way to picnic, swim, and rockhound – but mainly we just paddled leisurely to observe carefully the beautiful surroundings. We were on the water for seven hours and made only 12 miles, so it's evident that our paddling was neither fast nor continuous.

The gravel bar where we spent the night was a choice spot and we were the sole occupants! After a tasty meal and before bedding down, we sat around the campfire. Although there was not a cloud visible in the sky, we were careful to check a possible exit up the bank from the gravel bar and to tie the boats securely. Big rises can come from distant cloud bursts as the Buffalo is a big watershed in hilly country.

We hated to leave our gravel bar, but we shoved off shortly after breakfast. We were not certain that we had floated beyond the half-way mark to our destination, but after several miles we spotted a check-point to verify our location. We encountered more white water than the day before, but were never in real danger of capsizing. The toughest spots were the low hanging willows on the sharp bends with swift current flowing beneath them.

At lunch time we picnicked on a very small gravel bar where Spring Creek runs into the river. What a delightful place! The butterflies thought so too, as there were hundreds of them around. We hiked up the creek bed and filled our canteens with fresh, cool spring water coming from the mountain side. We sighted our destination, the huge Highway 14 bridge, at 4:00 p.m. We had made the 11 miles in five and one-half hours of fairly easy paddling. Obviously, we had a stronger current than the day before.

It was evident from the first sighting of the bridge that none of us was ready for the trip to be over. After unloading our gear on the bank, we all piled into one boat and paddled upstream and played around for another hour. Finally, we carried our gear up the bank to where our tent-camper awaited us. At the evening meal we discussed next year's vacation time. And wouldn't you know it – we decided to make the three-day trip from Highway 14 to the White River! After all, we haven't done that before! Have you?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Clear Creek
Cave Creek
Hurricane Creek
Whitaker Creek
Devils Fork
Dry Fork
Cecil Creek
Rock Creek
Cedar Creek
Spring Creek
Big Piney Creek
Little Piney Creek
Richland Creek

Fly Fishing: Selecting Balanced Tackle

DAVID L. ENGERBRETSON

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The sport of fly fishing is often believed to be very difficult, and to require many years of experience before any degree of proficiency can be attained. Nothing could be further from the truth! While it is possible to spend a lifetime studying the subtle intricacies of fly fishing, it is just as possible to learn to cast well enough to catch fish in as little as one hour or less. The writer's two sons, for example, caught their first trout on flies at six and seven years of age.

There are two requirements to learning to cast a fly: the proper equipment, and proper casting instruction. Either is useless without the other, but, since one cannot begin to receive instruction without equipment, the former may be the more important. Once well balanced tackle is obtained, the proper casting techniques can even be learned from a book.[1] Without balanced tackle it can never be learned.

A beginning fly fisherman is often mystified by the vast array of rods, reels, and lines available to him, and his first outfit is often mismatched, or totally improper for the type of fishing for which it is to be used. Contrary to popular opinion, the first step in taking up fly fishing is not simply the purchase of a rod, reel, and line. As obvious as it may seem, the first step is to decide *which* rod, reel, and line to buy. A beginner rarely gives this step adequate consideration, and the result is often disastrous, to say nothing of a blow to the budget.

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[1] In the writer's opinion, the book, *To Cast a Fly*, is the best one presently available on learning to cast, and can be purchased for 50¢ from: Scientific Anglers, Inc., P.O. Box 2001, Midland, Michigan 48640.

The correct place to start is not even with the tackle, but with the fish! The beginner must ask himself, "What kind of fish will I be trying to catch, and where will I do most of my fishing?" The type of fish will determine the type of flies to be used, and this, in turn, will partially determine the weight of line required. Then the rod can be selected to cast that particular weight of line. A trout fisherman, for example, will generally be casting relatively small flies, whereas a bass fisherman will be casting large bugs, poppers, and streamers. The larger, more air resistant bass bugs will require a heavier line than the small trout flies.

Lines

In all other types of casting, the weight of the lure or bait provides the momentum to pull a light line from the reel during the cast. In fly fishing, however, the lure or fly has little or no weight and adds nothing to the momentum of the cast; this must be provided by the weight of the line itself. Therefore, for fly casting to be most efficient, the line must match or balance the action of the rod with which it is being used. A line that is too light or too heavy will not be able to obtain the proper transfer of energy from the rod and will cast poorly.

A wide variety of fly lines are available and the code numbers and letters with which they are labeled can be very confusing. However, once the system is understood it is very logical and straightforward.

Fly lines are made in three basic shapes. The level line (designated L) has the same diameter throughout its entire length. The double tapered line (DT) has a uniform diameter through its "belly" and tapers to a fine point at each end. A weight forward line (WF) has a short front taper, a short heavy belly, and a long length of light "running line." In general, a double tapered line is used where delicate fly presentation is required. An added attraction is that when one end of the line becomes worn, it can be reversed on the reel and the other end provides a "new" line. A weight forward line is used for casting large bugs and streamers, casting in the wind, or for making long casts. The level line is relatively inefficient, and, except for its low price, is generally a poor choice.

Prior to World War II, fly lines were made of silk and were identified by letters (A,B,C, ... H) which corresponded to a given diameter. Thus, an HCH was a double taper, a GBF a weight forward taper and so on. Following the war, however, several synthetic materials came into use for making fly lines, and the result was mass confusion. An HCH made by one company would have the same diameters as an HCH made by another company, but their weights would be completely different. And, since it is the weight of

the line that balances the rod action, one could never be certain of buying the proper line if he didn't use a single brand name.

The situation became so intolerable that the American Fishing Tackle Manufacturers Association (AFTMA) formed a committee to decide upon uniform standards for fly lines. As a result, fly lines are now designated by the weight of the first 30 feet of the line. Each weight range is given a code number from 1 to 12.

Therefore, a line marked DT-6 is a double tapered line of which the first 30 feet weigh approximately 160 grains, a WF-8 is a weight forward line of about 210 grains, and an L-5 is a level line of 140 grains, and so on.

There is yet one more variable to fly lines; some float, some sink, and some lines do both. The letter F designates a floating line, the letter S a sinking line, and the letters F/S a line in which a portion of the line (usually the first ten feet or so) sinks. The letter I identifies an intermediate line which floats if greased and sinks if not greased. Thus, a DT-6-F is a double tapered, 6 weight line that floats, and so on.

A very definite advantage of the new numbering system is that now any brand or type (floating, sinking, weight forward, etc.) of line can be interchanged with no difficulty. If a rod calls for a weight six line, any brand or type of line will fit if it is a number six line.

As a fly fisherman gains experience he may find that, while most situations call for a floating line, occasionally he will require a sinking line to reach the bottom of a deep stream or lake. These lines are available in fast, slow, and medium sinking models. Such a fisherman will carry this special purpose line on an extra reel spool, then, when the need arises, he can simply change spools.

Rods

Traditionally the classic fly rod is built of split bamboo. The prices for such rods, however, generally start at $75 to $100 which rules them out for the average beginner. Excellent rods of tubular glass are now available at a fraction of the price of bamboo, and are being used by all but the devout "purist."

Once fly lines are understood, the selection of a rod is relatively simple. Trout fishermen, except for specialized situations, generally use a seven- to eight-foot rod which balances with a weight six or seven line. In cases where the smallest flies are called for, a rod requiring a five or even four weight line may be used; and on "big water" such as lakes or western rivers, a rod for a weight eight may be necessary.

Panfish and bass fishermen will usually cast a seven and one half to eight and one half foot rod with a weight seven or eight line, and

steelhead, salmon, and saltwater fishermen use eight to nine foot rods for eight, nine, or ten weight lines.

A complete discussion of rod "actions" is beyond the scope of this article. Suffice it to say that the beginner should avoid either the extremely stiff "fast" action or the very soft "slow" action in a fly rod. The action of a rod may be observed by placing the rod at a downward angle with its tip touching the floor, and applying pressure to the grip. A "fast" rod will show most of the bend near the tip and none near the grip, while a "slow" rod will bend quite abruptly near the grip. The ideal would be somewhere between the two extremes, and would show a smooth curve from the tip to the grip. For all practical purposes the terms "wet fly" and "dry fly" actions are meaningless today, but are often used by inexperienced salesmen.

Reels

Except for special conditions, the fly reel is primarily a storage place for the line. Two types of reels are available, the single action and the automatic. Most experienced fishermen prefer the single action in which the spool of the reel makes one revolution with each turn of the handle. The automatic reel is spring wound and retrieves line when a trigger is pressed. The advantages of the single action are its relatively light weight, larger line capacity, rugged construction, and ease of maintenance. Automatic reels are generally quite heavy. have a limited line capacity, and are more difficult to maintain. They are, however, handy for a boat fisherman who must keep loose line from becoming tangled in the bottom of the boat.

Whichever type of reel is selected it should have sufficient line capacity to handle the weight of line required by the rod, and be light enough so that the rod balances well in the hand without the feeling of heaviness in either the butt or the tip. Incidentally, the term "balanced tackle" refers to matching the rod with the proper line for which it was designed, and not to the fact that you can balance the rod on your finger at some particular point.

Leaders

A fly fishing leader is made of monofilament nylon and serves as a means of attaching the fly to the bulky fly line as well as being the final link in the energy transfer system of the cast. As with the other components of the system, the leader must be selected with care. A properly designed leader will allow the fly to "turn over and lay out" at the completion of the cast whereas a poorly designed leader will cause the fly and leader to pile up in a hopeless tangle.

Since the leader is but an extension of the line, it is not surprising that the best leaders are tapered, i.e., finer in diameter at the fly end than at the line end. In general, level leaders are not recommended as they do not allow for the proper transmission of energy from the line to the fly, and thus contribute to casting difficulties.

Two types of tapered leaders are available, the one piece knotless and the knotted, or compound, taper. The latter is made up of short pieces of level material joined together in progressively smaller diameters. Either type is satisfactory, but most "experts" tend to use the knotted type as they feel that the knots add a bit of weight to the leaders and assist in turning over the fly. Then too, most "experts" tie their own leaders and experiment with different designs for different purposes and the home-tied leaders are, of necessity, the compound type. Of course, a knotless leader only remains knotless until you have changed flies a few times after which you must knot on a new tip section.

Tapered leaders are labeled according to their length and tip diameter. The letter X is used to denote the various diameters ranging from 0X, the heaviest, to 7X, the finest.

When selecting leaders it is necessary to consider the flies with which they will be used; a large fly requires a heavier leader and a small fly a fine leader tippet. In general, a beginning fly fisherman would do well to start with a 7½ to 9 foot leader in 4X for trout, 7½ foot in 2X or 3X for panfish, and 7½ foot in 0X to 2X for bass. As experience is gained, you will discover which additional leaders are required for your particular situations.

Summary

Fly fishing is a great sport that can afford one a lifetime of pleasure and challenge. The basics are not difficult to learn.

Often the only difference between one who attempts to learn fly fishing and gives up and one who goes on to become a dedicated angler is in the selection of his initial equipment. Mismatched odds and ends of tackle should not be used as being "good enough for a beginner," but careful consideration should be given to the selection of a properly balanced outfit for your kind of fishing. The tackle need not be expensive, but all of the components must match.

Let's Go Orienteering!

GLORIA G. MILES

Gloria Miles is an assistant professor of physical education at The University of Georgia, Athens. She received her B.S. degree from Hanover College, Hanover, Indiana, the M.A. from The University of Northern Colorado, Greeley, and the Dir. P.E. from Indiana University, Bloomington. She has served as department chairman and taught in the Metropolitan School District of Perry Township in Indianapolis, Indiana for several years.

Thanks to Major Ernst Killander of Sweden, a new sport was developed which combined cross-country running with land navigation. The idea was devised to provide an activity suitable for all ages. The sport of orienteering spread rapidly throughout the Scandinavian countries between 1919 and 1960. The popularity of the sport began to influence some of the European countries in the 1960s and was introduced into the United States late in that decade. It is being promoted particularly at Southern Illinois University and the United States Army Ranger School at Fort Benning, Georgia. The subject of orienteering is beginning to appear in some basic physical education programs at the university level.

Orienteering simply defined by Johnson and Wynne (see Readings, page 42) is "the art of navigating a fixed course with five or more check points in sequence in the shortest period of time." The mental skill of land navigation is combined with the physical stamina of a cross country runner. The perfect course is so arranged that it gives equal weight to both these skills and in so doing tends to equalize the abilities of the participants. The participant must determine the best trail to use in order to reach the stated check points.

Since little equipment is needed, the sport is a practical activity for the individual. Good shoes, protective clothing, a pencil, a map, and a compass are all one needs to participate.

The availability of large land areas with great variability in topography is probably the task that is the most difficult to overcome. The orienteering course should be planned in such a way that the participant has several choices available to reach the objective. Each choice offered should be alluring to the participant and each should favor some special skill that the participants may have. For example, a strong runner may wish to climb over an

obstacle while the adept navigator may prefer to go around to conserve energy for another phase of the course.

Each participant is required to navigate his own course and to record and validate his score card at each check point. Any kind of marker may be used but it is usually concealed in such a way that it is visible from only a few feet.

"The Orienteering Congress limit the size of the point markers or controls to 30 or 40 inches and emphasize that their location be carefully placed to eliminate chance discovery," according to Johnson and Wynne. Maps prepared by the United States Geodetic Survey are those most commonly used since they are multicolored and show geographic features in detail. Unpopulated land areas should be used to avoid features which make compass navigation unnecessary.

Orienteering in its strict form is an excellent activity for a physical education class or intramural or extramural activity and offers a new and exciting sport challenge to camp and outdoor education enthusiasts. The sport may be easily modified for the particular group involved. The camp person could specify a hiking course rather than a running course. Another modification can be made by altering the length of the course to suit the particular situation or group.

Orienteering has a great potential for fulfilling the recreational and leisure time activity for diverse groups and ages of participants. This activity is one that can fulfill the individuals need to return to nature and can promote ecological knowledge and understanding. Let's go orienteering!

Readings

Johnson, Thomas C. and Wynne, Lewis N. "Orienteering: The Sport of the Future." *GAHPER Journal*, Fall, 1971.

Walker, Larry. Captain, United States Ranger Department. An address to the Southern Technical Institute. United States Army, Fort Benning, Georgia.

Ideas for Photography in the Camp

EVA M. BUSHMAN

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Photography can be a useful tool for fun and education in camps of all kinds. Day and season camps, with their varied activities and ceremonies, are fertile fields for young photographers. In outdoor schools, photography can be integrated with other studies and class projects.

Little equipment is necessary for the picture-taking camper. A simple box camera can produce striking photographs when effective techniques are used. More complex cameras are helpful for special situations, but are easily damaged at camp; for this reason they are not recommended for use by beginners. Flash equipment is useful for photography indoors, at night, or in deep shadows. However, exciting campfire pictures can be obtained without flash if the camera has a mechanism for allowing time exposures.

The performance of photographic equipment depends largely upon the care given to it. Camera cases help protect equipment from bumps, dust, dirt, and prolonged exposure to bright light. Plastic bags are especially useful for protecting cameras from moisture and for keeping dust away from lenses and camera interiors.

Various types of films are available, each with its own unique purpose. Both color and panchromatic black and white emulsions have a place in camp photography. The more popular color films yield exciting pictures of friends, flowers, and scenery. Black and white film records deer tracks, cloud types, and rock formations with the greatest clarity. Black and white film is necessary when young photographers process their own films and prints. (A few color films do allow user processing, but these are too critical for beginning processors.)

Taking snapshots is a favorite activity of many campers. Friends, activities, and the camp environment are logical subjects. Snapshots can be improved if young photographers remember basic rules for good picture taking. Always check the camera to see that it is loaded. Advance the film after each shot. Hold the camera steady when taking a picture. Don't get so close to a subject that it is out of focus (three feet or more is usually safe). Be certain that fingers are not held in front of the lens. Respect the equipment: protect it from heat, dust, and moisture.

Photographs of people should be candid. They are more meaningful if they tell a story. Young photographers should be encouraged to go "where the action is." Their pictures should depict camp life as they see it. Shots of friends sitting around the campfire, playing with a pet snake, or even putting a frog in the counselor's bed will preserve many fond memories. Those who keep their cameras with them as much as possible will be able to take advantage of many candid picture opportunities.

Preserving personal memories is an important function of snapshots but not the only one. Campers at outdoor schools may take their pictures back to school to be used in constructing a bulletin board for the rest of the school to see. They may help illustrate a class diary which includes the outdoor school experience. Exceptional photographs might even be used for public relations purposes, in a story in the local newspaper or as a part of an attempt to gain more support from the school board. Established camps might use camper snapshots for advertising brochures or in information for possible financial supporters.

Photography can aid in several aspects of science education. The camera itself can provide a lesson in optics. Processing of black and white film and contact prints is fun and easy, and involves several interesting chemical reactions.* Photographic collections of specimens can be made when materials are difficult or impossible to remove from the habitat. Trees, rock formations, animal foot prints, and wildlife homes are taken out of the woods in this way. Ecological relationships may be represented in photographs of groups of organisms, whether at the base of a tree or in a tidepool. Star trails may be recorded photographically to demonstrate terrestrial rotation. This may be done by securing the camera to a tripod or rock, pointing it at the sky (the north is preferable), and leaving the shutter open for at least two hours (beware of nearby lights).

Photography can be useful in teaching basic art concepts, especially composition. Foregrounds should be a part of the composition, either to frame the subject, or to lead the eye into the picture. Backgrounds should be uncluttered and relevant. The angle of the shot should also contribute to the whole. Subjects should appear to be moving into the picture, rather than out of it.

Feelings and impressions can be expressed in photographs. Sun filtering through the trees may reflect tranquility. A sea of laughing faces can mirror happiness or friendship. Campers will find photo-

*Chemicals and directions for darkroom processing are available in most stores selling photographic equipment.

graphic ways to convey their own emotions, given some initial guidance.

Many campers will enjoy photographing abstract patterns of nature. Leaves scattered on the ground, ripples on a lake, or the reflection of hills in a pond all make exciting and unique pictures.

The ideas presented here are only a sampling of the many possibilities for the use of photography in camp. The resourceful leader and her campers will discover many more. Through the use of more advanced techniques and more versatile equipment, the potential for this medium becomes even greater. A lifetime of creative picture taking is in store for the camper who finds joy in outdoor photography.

Backpacking and Hiking Course

JOAN HULT

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"Climb the mountains and get their good tidings. Nature's peace will flow into you as sunshine flows into trees. The winds will blow their own freshness into you, and the storms their energy, while cares will drop off like falling leaves."
John Muir

Man was made for organic action; yet he has done everything in his power to prevent that action through his technological advances, and his "push-button" society. Man was *not* made for this double-time rhythm of life, nor for the tensions and pressures which plague him. Evidence of his inability to cope with anxieties is found in the fact that our number one killer is nervous disorders, and that there is a steady increase in prescriptions being filled to prevent these tensions and to ward off anxieties. All of this emphasizes the need for a style of life which can help to equalize the pace of modern society by offering leisure pursuits which have a quieting, peaceful, and harmonious effect on man. Man must learn to live in the society he has created and one way is to escape to commune with nature, to seek the secret of the inner self and to work toward self-renewal.

Physical educators can attempt to meet some of these needs of man by broadening the scope of curricular offerings to include an elective course in backpacking. The course outline which follows is designed to give the student the opportunity to gain skills, techniques and knowledges of backpacking and hiking, and to help the student learn to live in and to use the wilderness using sound conservation principles.

General Information about a Course

1. The course can be designed for either high school or college students. A lecture and laboratory experience from a problem

solving approach might be offered. The course could include day trips with a culminating experience in a backpack trip.

2. The student can be evaluated by his performance during the laboratory experiences and by a written examination.
3. The instructor should be qualified to work with students; have a love for the freedom of the hills; have a depth of knowledge and experience in backpacking, hiking and survival techniques; and be knowledgeable about resource materials.
4. The funds needed for the initial investment can be minimal. The only essential equipment is cooking gear, a few backpacks, and some tarps. Dealers and outfitters are anxious to display their merchandise and to demonstrate the use of equipment. In addition, they often lend equipment for overnight tripping. The student is expected to rent or purchase his own boots.

COURSE CONTENT

I. EQUIPMENT: Consumer Education, Application, Use and Care

A. Clothing – Foot to head (dress in layers – warm, comfortable, breathing space)
   1. Shoes and socks as foundation of the climber (*perfect* fit)
   2. Trousers, shorts, sweaters and shirts (designed for warmth and must be breathable)
   3. Parkas, raingear (poncho must "breathe" and be water repellent)
   4. Underwear (fishnet or open mesh)
   5. Accessories (headgear, mittens, gloves)

B. Packs, shelters, and sleeping gear
   1. Day packs (rucksacks, framed rucksacks up to 15-20 pounds, comfortable and snug fit)
   2. Pack frame and bag (comfortable and correct fit)
   3. Tarps vs. tents (either tarp or two-part tent must "breathe" and be windproof)
   4. Sleeping attire (down sleeping bags, ground cloths, convoluted polyurethane form, must "breathe," be spacious, warm, comfortable)

C. Cooking and eating gear
   1. Stoves (gasoline, propane, and butane)
   2. Utensils (minimum pots, cooking kit, and cup)
   3. Food containers (tight, plastic, polyethylene bags, boxes, squeeze tubes)
   4. Canteen/plastic bottles

D. Miscellaneous equipment
   1. Flashlight–lightweight
   2. Fire starters–covered
   3. Sunburn preventatives–not beach variety
   4. Knife–sharp
   5. Glasses–colored or goggles
   6. Insect repellents
   7. First aid kit
   8. Compass–simple sight
   9. Repair/improvisation kits
   10. Maps

II. RESOURCE MATERIALS: Lecture and Discussion

A. Books, pamphlets and periodicals
   1. General reading on wilderness
   2. Reading in areas of special interests (plants, rocks, conservation, orienteering, birds, fish, ecology – application to hiking life)
   3. General climbing bibliographies
   4. Films and other visual aids
   5. Selected guides

B. Organizations and equipment sources
   1. Mountain clubs (membership and information sources)
   2. Dealers and outfitters (list)
   3. Training schools (information)

C. Discussion of need for equipment and materials
   1. Purchase power and minimum needs (clothing, pack, sleeping bag)
   2. Directional finders
      a. Maps (highway, forest, topographic – index and 15 minute quadrangles)
      b. Terrain description (books, pamphlets, guides)
      c. Knowledge of wilderness and camping areas
      d. Instruction and practice in reading a compass

III. STEPS TO TAKE IN BACKPACKING AND HIKING

A. Getting ready – for maximum efficiency and effectiveness
   1. Conditioning ("off your seats and on your feet")
      a. Appropriate amounts of strenuous walking and running with some uphill walking and running
      b. Conditioning of shoulders and back by carrying pack ten miles during run-walk
      c. General conditioning (choice for endurance and strength)

d. Food intake prior to and during (carbohydrates, fats, proteins)
e. Care of feet and skin (barefoot, exposed skin, boots, toe nails)
f. Rest requirements (habits prior to and during)

2. Selection of location and site (availability, difficulty, accessibility, prevailing conditions, predicted weather)
3. Packing up and starting off (*think light*)
   a. Preliminary to actual climb (convenient trailhead start with sleeping comfort)
   b. Clothes, food, shelter, sleeping and check list
   c. Extra food and clothes for return
   d. Division of food and equipment by meals and day (for maximum efficiency place in same place each time)
4. Selection of food (*eat your way up and down the trails* – select with care from supermarket, natural food suppliers – dry freeze and dehydrated foods from mountaineering stores)
   a. Calories (needed: carbohydrates = 50%; protein = 27%; fat = 23%)
   b. Weight-saving foods (dry freeze and dehydrated)
   c. Energy, water, and salt needs
   d. Special lunch needs (digestive, weight control, energy production, "goodies")

B. Camping out – *home away from home:* Think kitchen, bedroom, living in beauty
1. General consideration of site for living and exploration (forest, meadow, regular campground)
2. Specific consideration of areas
   a. Bedroom (dry, warm, soft)
   b. Kitchen (access to water, wind protection, fire pit)
   c. Living room (place for campfire – discussion, sharing beauty, peace and quiet center)
   d. Bathroom (safe, unexposed, discreet)
3. Clean up of site (keep virgin land, hide evidence of presence)

C. Hiking the trails: Lecture and practice of skills, techniques, and procedures
1. Trail identification
   a. Reading maps and compass
   b. Reading blazes, rock cairns, other signs
   c. Specialized help in brush, talus, scree, snow walking, snow-stream crossing, cross country
2. Walking the trails (techniques)

a. General pace setting (consider time of day, difficulty – lungs up and legs down; talk as you go)
b. *Rest* ("To rest is not to conquer")
   1. Shakedown
   2. Sockout
   3. Collapse
c. Variety of step patterns (hiking with the eyes)
   1. Whole foot (toed in)
   2. Rest step (limp step)
   3. Scrambling
   4. Rock hopping
   5. Toe-to-heel and heel-to-toe (toed out)
   6. Side step
   7. Snow steps (glissade)
   8. Cross country
   9. Balance climbing

3. Hoisting and carrying the pack
   a. General loading and unloading principles
   b. General carrying principles (controlled weight distribution)
      1. Ascending (weight on hips, heavy objects on top and close to back)
      2. Descending (redistribute weight control)
4. Aids to living in wilderness
   a. First aid (blisters, cuts and bruises, sprains, burns)
   b. Survival techniques
      1. Panic problems ("keep head on straight")
      2. Emergency direction finding (stop, mark, shout, prepare for night, let others find you)
      3. Improvising for warmth (number one problem)
      4. Special storm conditions and considerations

IV. INTRODUCTION TO SPECIALIZED FORMS OF MOUNTAINEERING: Lecture by Resource Personnel

A. Basic rock climbing procedures
   1. Routefinding
   2. Beginning and advanced techniques

B. Basic snow, glacier and ice climbing
   1. Routefinding
   2. Beginning and advanced techniques

Recipes and Survival Kit for Backpackers

HELEN BROOMELL

Mrs. Broomell is co-director of Camp Minocqua for Boys in Wisconsin. She is active in the American Camping Association, and has had extensive experience in wilderness camping.

Since backpacking is becoming a popular leisure time activity, people need to know what kinds of food, clothing, and other items are needed for the most successful trip.

The recipes which follow have been tested and used successfully on backpacking and wilderness canoeing trips. They are relatively simple and are prepared at home prior to leaving on the trip.

Some Good Trailfood

GRANOLA (This recipe can be varied by adding nuts, and eliminating or changing any of the ingredients except the oats, oil and honey.)

- 4 c regular rolled oats
- ½ c oil
- ½ c honey
- ½ c pumpkin seeds
- ½ c sunflower seeds
- ½ c wheat germ
- ½ c sesame seeds
- ½ c coconut
- 1 c raisins

Combine oil and honey and heat to mix. Add to all other ingredients except raisins and toast at 325° for 45 min. until brown. Add raisins. It will "crisp" as it cools.

PAT's GORP (Thank you to Pat Armstrong)

- 2 12 oz pkgs of semi-sweet chocolate bits (tropical chocolate if available)
- 2 8 oz pkgs butterscotch bits
- ½ c honey
- ½ c chopped dates
- ½ c seedless yellow raisins
- ½ c chopped dried apricots
- ½ c shredded coconut
- ½ c cashews
- ½ c walnuts
- ½ c wheat germ
- ½ c uncooked oatmeal
- ½ c Bircher Muesliu (health food stores: Trade name: Fini

Melt chips in the top of double boiler, add honey. Pour over rest of dry incredients in a large bowl. Mix well. Pour mixture into greased pans and cool. Cut or break into hand-sized chunks. Wrap tightly in

plastic wrap and seal with tape if necessary. Store in refrigerator until needed.

Gorp is veritably indestructible and non-squashable under any conditions. Can be used as insulation under sleeping bags, in hip pockets, or whatever. It is reported that 2 lbs will provide enough calories, protein, vitamins, and minerals to sustain even the most strenuous day's activities at high altitudes.

MOUNTAIN BARS

- 2 c crushed vanilla wafers
- 1½ c finely chopped nuts
- 2 c powdered sugar
- ½ lb. finely chopped dates
- 1 c finely chopped dried apricots
- 1 c seedless yellow raisins
- 2 tbs light corn syrup
- 6 to 8 tbs honey
- ½ tsp vanilla or maple flavor
- enough water to bind together

Combine all ingredients in a large bowl. Add liquids and kneed to mix. Press and shape into small log rolls about 2 by 5 inches. Roll in powdered sugar and wrap in plastic. Store in regrigerator until ready to use.

WALNUT STICKS

- 2 c whole wheat flour
- ½ tsp salt
- 2 tbs brown sugar
- 4 tbs oil or melted margarine
- 1/3 c finely chopped walnuts (black walnuts preferably)
- 1/3 c cold water
- 1/3 c honey

Mix dry ingredients and drip oil over them. Mix well and pour in water & honey. Knead on board and press out ½" thick. Cut into ½ x 3" pieces, place on greased cookie sheet & bake at 325° for ½ hr. turning once.

BASIC JERKY

- 1 or 2 lbs round steak
- 1 qt water
- 1 c salt

Freeze a piece of well trimmed round steak and slice very thin across the grain. Prepare a brine solution from the water and salt and soak the meat slices in it for at least an hour but no more than 8 hours. Place meat slices on a wire rack in the oven and dehydrate for 24 hrs on lowest heat (200°). Cool and store in refrigerator or sealed plastic bags.

This recipe can be varied by adding liquid smoke to water and seasoning the meat with garlic powder and seasoning salt.

HONEY BREAD

- 3/4 c honey
- 1 c granulated sugar
- 1 tsp cinnamon
- 1 c boiling water

1½ c flour	pinch nutmeg
1 c whole wheat flour	1 c slivered almonds
1 tsp soda	½ c chopped dried apricots

Put honey in large bowl and add the previously mixed dry ingredients. Mix well and add one cup boiling water. Line a loaf pan with wax paper and fill 2/3 full with the mixture. Bake for 1½ hrs at 350-375°. Allow to cool before removing from pan. Slice and butter and wrap in plastic, putting four slices in each pocket.

LOGAN BREAD

2 c water	3/4 c dark molasses
2 lbs whole wheat flour	1/4 c powdered milk
2/3 c melted shortening	½ tsp salt
2/3 c sugar	1 tsp baking powder
3/4 c honey	1 c chopped nuts

Mix dry ingredients together and add water, honey and molasses. Fill two or three small loaf pans 2/3 full and bake at 300° for one hour. Cool loaves enough to remove from pans and replace on rack in oven and dry out for several hours at low heat with oven door ajar. When bread is as hard as a rock it is done. Cool and slice and spread with butter or jelly and wrap four or six slices together in plastic. Store in refrigerator.

These two breads are of high energy, high protein content.

SOYBEANS

May be purchased salted in health food stores, or do your own. Soak in water overnight. Drain on paper towels and place on a cookie sheet in a warm oven for a few minutes until dry. Fry beans in hot 350° oil for ten minutes until golden brown. Drain on paper towel, salt, and store in plastic bags. A high protein snack to restore energy.

Survival Kit

A survival kit is essential, for a person must be prepared for any emergency on a wilderness camping trip of any kind. Included in this kit are items which have been found to be of most help and easily obtained.

Contents of Survival Mini-kit:

Metal container (band-aid box, Sucrets box, etc.) to melt snow, heat water, etc.
Mirror for signaling (glue in lid)
Matches – waterproofed
1 ft heavy cotton string dipped in melted paraffin
Fine steel wool

Halazone wrapped in foil
Packet of chicken broth
2 fish hooks
Needle and thread
Picture hanging wire
Single-edge razor blade
Vitamin pills
Aspirin – pain killer
Antibiotic cream
Safety pins
Whistle
Electrician's tape, plastic

Because a backpacker must carry everything, preplanning for a hike is essential. The following checklist should ensure a well-prepared trip with nothing important forgotten.

Backpacker's Checklist . . . or make up your own

Maps
Notebook, pencil
ID
Water container
First aid kit
Toilet kit
Flashlight & spare bulb and batteries
Sunglasses
Knife, compass and waterproof matches (carry on person!)
Sleeping bag in stuff sack
Survival mini-kit
Cook kit
Backpacker's grill
Stove if needed
Food in bags
Condiments
Lunch & trail snacks
Tent or tarp or both
Foam pad
30′ nylon cord
2 bandanas
Raingear
Extra clothes

Note: Water weighs 2 lbs per quart.
1½ to 2 lbs per day of dry food is sufficient.

Favorite Campfire Foods

HELEN KNIERIM

Helen Knierim, associate professor of physical education at the University of Wisconsin at Whitewater, received her B.S. degree from Illinois State University, Normal, and the M.A. and Ph.D. from the University of Iowa, Iowa City. She is past chairman of the Outing Guide *Committee.*

Roast on a String

Wrap a 3 pound rolled roast securely in wire and leave 12-14 inches of wire free to attach to a piece of string that is tied to a sturdy pole. Lean the pole against one forked stick and anchor to the ground with a second forked stick. The roast should hang 6-8 inches to the side of the fire. The top of the roast should be in a direct line parallel with the top of the hot fire. Twist the roast on the string and it should turn itseif naturally during the cooking time. Sometimes a piece of cardboard attached to the string will help the turning on a windy day. Place a pan on the ground under the roast to catch drippings. The roast should cook about one hour per pound. Less expensive cuts of beef have been cooked successfully "on a string."

Have you tried ----

Donuts and pineapple in foil?

Slice a plain donut in half and put pineapple ring between the two halves. Sprinkle with cinnamon and sugar or powdered sugar and wrap in foil. Put on the coals for a few minutes or long enough to heat the donut. Enjoy this delicious donut for breakfast or desert after lunch.

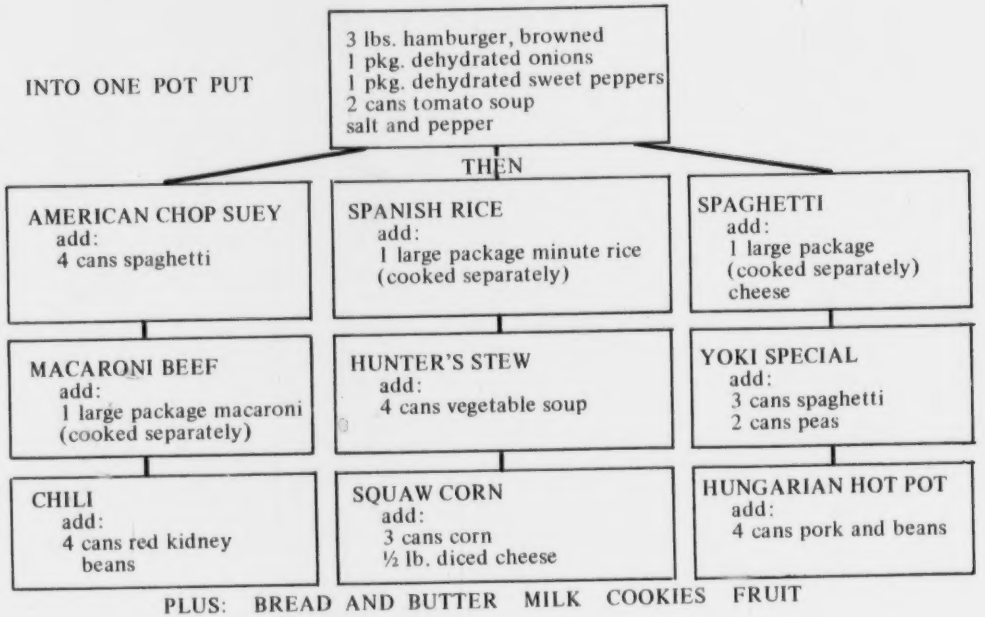
Hodgepodge soup?

If you are planning lunch for a large group of people, have each person bring one can of soup. Pour the many types of soup all into one pot and heat. You will be pleasantly surprised at how good it is!

Cooking an egg in a paper cup?

Fill a paper cup with water and one egg. Place in campfire and time egg as if you were cooking it on a stove. Remove from fire and enjoy a delicious hard or soft boiled egg.

MASTER PLAN FOR ONE POT MEAL – 12 PEOPLE



Outward Bound — An Instructor's Views

WILLIAM H. RICHARDS

William Richards, associate director for the Northwest Outward Bound School, Eugene, Oregon, received his B.S. and the M.S. in Ed. degrees from the University of Massachusetts, Amherst. He has served as an instructor in the Colorado and Northwest Outward Bound Schools.

"NORTHWEST OUTWARD BOUND: a 24-day wilderness adventure in the mountains of Oregon, Washington and Idaho, during which young men and women, ages 16-22, from all walks of life, from all parts of the U.S., are challenged by mountaineering, cross-country hiking, river-running, service and rescue tasks and a solo experience."

Catalog description.

Outward Bound – a process, an experience, an adventure that cannot be forgotten. In the ten short years that Outward Bound has been in this country, nearly 20,000 participants from all walks of life have shared in the excitement, adventure, solitude, and deep personal experience offered through an Outward Bound course at one of the six schools located in the United States.

From the initial course involving 88 students in the summer of 1962 near Marble, Colorado, Outward Bound has emerged as a viable program of effective education. The program is viewed by some as a panacea to our open and often self-centered society and by others as a physically demanding experience worthy of pursuit by any young person seeking individual challenge not often available in our daily educational routine. Regardless of the interpretation adhered to, the experience gained has played a significant role in the lives of many individuals who have elected to attend an Outward Bound course.

Basically, what Outward Bound attempts to do is to make the individual an active participant rather than an idle spectator. By confronting each student with the basic elements found in the wilderness or off the rugged coast of Maine, it is anticipated that the individual will gain a new perspective of himself and come to understand and appreciate the role that he or she is capable of playing in our society, which is often characterized as unsympathetic and without compassion.

The activities commonly pursued in the program often become incidental to our greater personal objectives. Rock climbing, rappelling, mountaineering, kayaking and sailing must be viewed as

the means by which learning takes place and not as ends in and of themselves. When a student has mastered a task which at first seemed beyond his means, he has taken the first step on the threshold of self-discovery. How he views this initial phase of success and that of the success achieved by the other members of his patrol is the crux to the experience gained through Outward Bound.

As evidenced by the increasing number of educational institutions throughout the country that have adopted various aspects of the Outward Bound philosophy or program elements, it has become apparent that individual development as fostered and encouraged through these activities is gaining greater priority in our educational thinking and implementation. As a co-educational activity, I have witnessed no planned or spontaneous program that offers such an immediate definition and recognition of roles for each participant. For as members of mixed patrols, each must share in the physical demands and accomplishments of the group. Respect for the individual and his or her expected contribution to the group are recognized immediately.

Often new means to group communication are discovered that serve the individual well regardless of his or her position in our society. The ability to listen and to relate to others effectively acquire real meaning when gained in a tranquil or sometimes hostile environment provided by nature. The real and often ignored dimensions of humility acquire significant meaning when seen dwarfed by the snow-capped mountains or great Douglas Fir.

The skills and appreciation gained by the student should not be ignored completely for often they are used throughout one's life in pursuit of similar experiences. The uniqueness of these skills becomes apparent when one realizes that they do not result in a victor or vanquished situation as do many competitive situations promoted within our society today. For many of the challenges accepted and skills mastered have meaning not found on a scoreboard, regulated by a referee, or cheered for by hundreds of spectators. The victories are personal, real and long-lasting.

From my observation there has been no profile that could be used to identify the typical student. They are tall or short, slight or burly, black or white, athletic or diffident. Thus grouping by inherent strengths or weaknesses has little consideration in our quest for greater self-awareness and group empathy through the activities of the program.

In the final analysis, Outward Bound has meant a great deal to a great number of individuals, including many adults who found themselves participating on a teacher practicum, manager's course or an adult coed course. For each the experience has been unique and subject to one's own interpretation. To the graduate of a course, the

tasks have been mastered, the feeling of success measured by one's own standards and the lasting effect immeasurable.

Outward Bound Schools:

Northwest Outward Bound School, 3200 Judkins Road, Eugene, Ore. 97403.
Colorado Outward Bound School, P.O.B. 7247 Park Hill Station, Denver, Colo. 80207.
Texas Outward Bound School, 3917 Cedar Springs Road, Dallas Tex. 75219.
Minnesota Outward Bound School, 330 Walker Ave. S., Wayzata, Minn. 55391.
North Carolina Outward Bound School, P.O.B. 817, Morganton, N.C. 28655.
Hurricane Island Outward Bound School, P.O.B. 729, Concord, Mass. 01742.

An Outward Bound Experience — A Student's Views

JANICE DELACY

Janice DeLacy is a mathematics teacher at Newport High School, Bellevue, Washington. She received her B.S. degree in aeronautics and astronautics from the University of Washington, Seattle, and her M.S. degree in math education at the University of Oregon, Eugene.

When I learned of Outward Bound it seemed like an exciting physical challenge and an opportunity for personal growth. I signed up for the 30 day teacher's course. Many in my course would probably be surprised to read this account since a program like this will never be the same experience for any two people.

One of my first lessons was in humility. I was used to excelling in physical and intellectual situations. My patrol members were in good physical condition and when hiking I was sometimes the one who needed to stop and rest. This role was unfamiliar to me. It was humiliating to admit that I needed assistance. Now, I look much harder for students who need help but are afraid or too proud to ask. I try to offer assistance before they have a chance to worry about asking. I find that students seeing others being helped are less hesitant to seek the help they need. My goal now is to develop the sensitivity that will allow me to step in and help *only* when the student has received the maximum benefit from struggling on his own.

During the course I was constantly amazed at how quickly we teachers became students. I was startled and embarrassed to assess my own performance on the sailing trip. I felt it was the staff's job to tell us of all possible difficulties just as my students feel I should automatically answer all their questions. Traits I strongly object to in students were apparent in my own reactions. I was unwilling to strike out on my own despite knowing there was enough food and water to complete the 50-mile trip. The lack of wind and the possibility of physical discomfort made us all turn back. Students seem to accept very few of the challenges they face. It had not occurred to me that the problem was a lack of ability to recognize challenge. I certainly would have taken advantage of the challenge the sailing trip offered if I had only recognized it. As a result of the sailing trip I became more alert to chances for facing the unknown. Thus, in contrast to many apprehensive participants just prior to the

urban phase, I was excited about going to Denver – a very undefined situation. Three days on skid row with $5.00 to my name turned out to be one of the most rewarding parts of the course. Now, instead of attempting to get students to want to accept challenge (a desire which they already have) I try to help them *recognize* challenging situations.

One thing that makes students less alert to challenging opportunities is preoccupation with the performance or status of fellow students. My personal standards were offended by some of the things that occurred in the coed patrols. I felt I could live with my objections and finish the course, but I gave up hope of benefitting from it. I saw many participants react similarly in other situations – especially the sailing trip. Ridiculously, a beautiful day was ruined when resentment arose over some members getting cold drinks and a motor boat ride from a friendly passer-by! Comparison can be a much greater obstacle to progress than I had imagined. Now, I try to use comparison to help students appreciate individual differences, not to separate the 'haves' from the 'have-nots.'

One individual difference I became increasingly aware of during the course was how people use time. My patrol leader did many things very leisurely. He seldom organized our activities by specific times. Some members resented this and felt he should be offering a regular schedule of activities. This relates directly to the question of how much, if any, unstructured time students should have. I saw that we are not doing the student a favor to plan all of his time. This deprives him of his individuality and soon he expects to be constantly told what to do. He resents planning his own time just as some teachers did on this course. Admittedly there will be many students who need guidance in planning and utilizing free time. Hopefully that guidance will cause them to accept the responsibility for planning their own experiences.

One afternoon during the rafting trip I seethed over the laziness and immature behavior of some of the crew. It is obvious now that the situation called for immediate attention since, when no positive action was taken, petty irritations grew out of proportion. The result was a careless maneuver with the raft that left my leg painfully reminding me of the incident for a few days. I had also been frustrated because the lax attitude of the crew prevented me from getting practice as a raft captain. Not all crew members were obeying commands so I could not judge the correctness of my commands. I felt pressured as I knew our time on the river was limited and we would soon move on to the next phase of the course. I can not recall having faced this type of frustration so strongly before. Now, I feel much closer to the student who complains that just when he is beginning to understand a topic, the topic changes and he has no control over that change.

The 17 mile marathon taught me that occasionally I should put students into situations which they would not face voluntarily, because the final result is worth the 'battle.' I first viewed the marathon as a necessary evil, thinking that it would take me several hours to complete it. I envisioned a stroll with rest stops, until one patrol member pointed out that walking all the way without stopping was not an unreasonable goal. Once I accepted this challenge I was eager to attempt it. I was elated when I finished in less than three hours and would feel terribly cheated if I had missed the experience. I have unconsciously minimized opportunities for individual work in my classes because students seem more comfortable working as a group and having things explained to them. Now, I hope to provide chances for my students to feel the kind of elation I felt by excelling individually in something out of the ordinary.

From observations in Outward Bound I see a new side to student behavior. My previous attempts to control behavior have centered on direct requests to the students for change or lectures on what was wrong and how to make it better. By identifying a behavior problem to a student I felt he could easily control it if he wanted to. It became clear to me during the course that behavior is a result of habit, and habits are hard to break even when one tries. The grandeur, beauty, and exhilaration that accompany an outdoor experience were not sufficient to break materialistic habits of many participants; desires for alcohol, cigarettes, favorite foods, warmth, and shelter prevailed. Mental attitudes offered similar resistance. For example, having found early in the course that the extent to which I challenged myself was in my control, I started by making an easy choice. I had dreaded the ice-cold morning dip. Having done it once and finding it was optional thereafter, I never did it again. This made it easier to back down a little on the next option. A single decision had started a pattern that was hard to break later in the course when I wanted to take some harder options. Now, I am careful to avoid classroom organization that indirectly develops poor habits in students.

When I had first discovered that my patrol did not function well together and showed little tendency to improve, I decided the benefits of the course would be minimal. However, the tremendous positive impact of the last few days of the course showed me how wrong this assumption had been. Instead, the frustrating events during the first three weeks greatly magnified the rewards of the last week. Now, I am more patient in trying new approaches at school, realizing that it may take some students a long time to respond to a change in program.

The beauty of an evening hike, the rapture and tranquility of the desert at night, unsolicited expressions of genuine feelings during tense or close moments, and the long solitude of three days alone are

experiences that deeply impressed me. Yet, to say that Outward Bound had a profound personal effect seems insufficient. One last incident may leave the desired impression. During the urban phase I sat in the city park one afternoon watching twin boys (about 4 years old) play with balsa wood airplanes. One boy kept taking his plane to Daddy and Daddy sent it on long flights. The other boy flew his own plane even though it repeatedly nose-dived to the ground. He never asked Daddy to fly it for him and seemed oblivious of the successful flights of his brother's plane. I shared the anticipation with which he made each flight and his determination to keep trying. It was sad to think that someday someone, for the sake of expediency, will probably stifle his independence and, unasked, fly his plane for him. I knew then how much I want to help all children fly their own planes!

Environmental Education — A New Name with Old Origins

WARREN M. LITTLE

Warren Little is a graduate of Harvard, has an Ed.M. degree from Tufts University, Boston, and is currently a doctoral candidate at the University of Massachusetts, Amherst. He has served as coordinator and director of the Liberty Council of Schools' Conservation Education Center, under Title III of the Elementary and Secondary Education Act of 1965. He has also done considerable consulting work in environmental education.

For many years a small group of sneakered birdwatchers, often called "conservationists," have been trying to tell us that man is the only species of animal that clutters up his own nest. Like other people who are deeply concerned about the environment, these "doomsday prophets" have been consistently ignored or ridiculed over the years. It is only within the last decade that man has finally become aware of the filthy sewers, which used to be called rivers and which used to provide us with a place to swim, fish, or go boating. Only recently has a fast growing population seen open space long used for recreation turned into "slurbs" and superways.

But there is still a lot of educating to do. The myth of superabundance of resources has not yet been dispelled, and the average citizen still believes that modern technology can cure all of the growing environmental problems. There is, however, an increasing awareness of these problems and a growing knowledge of man's interrelationship with his environment, touched off by such early "fanatics" as Aldo Leopold, Rachel Carson, and more recent writers like Stewart Udall and Paul Erlich.

The phrase "environmental education" was coined within the last year or two, and it has now become the popular description for a new discipline aimed at creating environmentally literate citizens who are not only concerned, but motivated to act. The discipline has its roots in a number of educational origins. The first of these is the study of nature, which achieved great popularity at the turn of the century. Nature study was concerned with the wonders of the natural world. Students of all ages marveled at the mysteries of plants and animals and studied them with hand lenses in the vast open fields and dense forests prevalent at that time.

Many outdoor educators have continued to bring about environmental awareness of current resource problems through the study of plants and animals. Thanks to these people, an interest in living plants and animals is being revived. The use of school grounds, long neglected for nature study purposes, is being contemplated or developed, but with a new dimension – the study of the relationship between these plants and animals and their environment. This science, known as "ecology," was missing in the narrow concept of nature study. Ecology has made the study of our natural world fashionable.

It is not just the nature lovers who have contributed to the origin of environmental education. Outdoor educators have also made contributions, with varying amounts of success. L. B. Sharp, one of the founders of outdoor education, defined the subject as "teaching outdoors those things which are best taught outdoors, while teaching indoors those things best taught there." This idea has done much to develop citizens who are aware of the environment and its problems. "Out-door education" generally has had a multidisciplinary orientation. Many texts on the subject explain in detail how schools can use their grounds to teach math, social studies, arts, and language as well as natural science, with or without ecological overtones. Such studies are conducted in outdoor classes throughout the country, on a day to day basis if knowledgeable teachers are available, or during a week of school camping. Here there are usually trained staff members to run the classes or to assist the school's teachers if the latter are not capable of setting up and running their own programs. These programs have been expanded greatly over the last three years as a result of funds from Title III of the Elementary and Secondary Education Act of 1965. Although these funds have given outdoor education a considerable boost, many educators are still reluctant to embrace the concept. If it is found in the curriculum, it is probably because of interest in the subject by an individual teacher, rather than because of a comprehensive school philosophy, with notable exceptions in sections of the country where it has long been part of the curriculum.

Although many people see environmental education as nature study with a new ecological twist or outdoor education with a new name, the term includes other areas, one of which is the study of our natural resources. Natural resources were not considered a subject for study in our schools until after the country had witnessed the devastating effects of poor soil management in the dust bowls of the Middle West, and had become aware of the destruction of the forests during the time of President Theodore Roosevelt. Roosevelt's Chief Forester, Gifford Pinchot, is credited with inventing the term "conservation," and although he himself changed the definition of

the word so many times that its meaning is still confusing today, it did connote the preservation of our natural resources.

"Conservation education" stressed the wise use of such resources as soil, water, and wildlife for the good of all over the longest period of time. The subject was, and still is, taught primarily where it is of most value – in the rural, producer-oriented areas of our country, and to students who are going into some form of resource management such as farming or forestry. Conservation education stresses a particular resource and is most often linked to regional development, jobs for people in depressed areas, or national defense. The traditional way of handling the subject in school is to place it at the end of the biology book where it can be taken up if there is time in the course or if it seems to be of regional value. The result has been little or no promotion of the need for conservation in the consumer-oriented East, and we now find ourselves in the "too little, too late" category in our attempts to rationally plan our resources for their efficient use and development.

Traditionally, conservation was considered a department of the natural sciences because it dealt, in one way or another, with living things. Students of economics were presented with conservation in the context of "resource education." Resource education stressed supply, demand, and the distribution of resources, often suggesting that if better methods of transportation and distribution could be developed, our resource problems could be solved. The new environmental education must stress the economics of resource use, because this is another important part of the total picture.

Nature study, outdoor recreation, conservation education, and resource management are the antecedents of today's environmental education. The new study incorporates these approaches, and adds a new and very important dimension: the study of man and his relationship to the environment. Increasingly, today's citizens are being called upon to make decisions which directly or indirectly affect their environment – in their family life, at work, during leisure hours, at the market, when they vote, or just in getting from one place to another. Students must be equipped with a knowledge not only of their biophysical surroundings, but of the impact man has had on his environment, if they are to make wise resource oriented decisions in the future. They must also be motivated to work toward the solution of environmental problems.

Although the focus of environmental education is man, not plants, animals, or other resources, the earlier studies are still of great importance. The whole of environmental education is equal to the sum of its parts. Man's interrelationship with his environment, sometimes referred to as "human ecology," cannot be studied properly unless one understands the environment and the problems

man has created. Outdoor education must be integrated into the curriculum so that it is not seen as one more addition to an already overloaded school schedule. We must understand that as our society finds itself with added leisure time, more efforts must be made to teach people how to enjoy it.

But even this is not enough. Environmental education must pervade the entire curriculum at all levels for it cultivates an awareness of our most pressing social problems, and all our intellectual skills must be marshaled to solve these problems.

The trend in education is toward loosened schedules and more interdisciplinary projects by student-teacher teams, as well as increased emphasis on a closer student relationship with the community in which he lives. Environmental education will strengthen this trend.

One final note: the solutions to environmental problems are not as important as the methods developed for obtaining those solutions in an educational setting. Tomorrow's problems may not be the same as those that face our students today, but the ways in which we analyze the situations, determine the facts, and construct tentative hypotheses, test, and apply them, will remain the same. If this sounds like the old "scientific method" which has been taught for years in general science and biology classes, it is! Perhaps there really isn't anything new in environmental education, just an important shift in emphasis. Our environmental problems aren't new either, but if we are to survive, we must be concerned and we must act now. As one student answered when asked to define conservation, "It's what we eat, breathe, and drink, and if we don't, we won't!"

Environmental Education Bibliography and Audiovisual Aids

BEVERLY M. LEE

Beverly Lee is a graduate of the University of Connecticut, Storrs, and obtained her master's and director's degrees in recreation and outdoor education from Indiana University, Bloomington. At present she is a research associate with the ERIC Information Analysis Center for Science, Mathematics, and Environmental Education, Ohio State University, Columbus.

Environmental concern has come to the forefront because of the buildup and ensuing impact of various environmental problems: depletion of natural resources, improper or inefficient resource management, pollution, the population explosion, increased recreation demands, and degradation of the urban and rural environments. Thus, the need for current knowledge and development of attitudes toward environmental management and problem solving is obvious. To accomplish this, all levels of the educational system must play a critical role in building a citizenry that is deeply concerned, fully informed, and actively involved. But where does one begin?

Since education about the environment and man's relationship to it covers a multitude of subject areas, an interdisciplinary approach embracing biophysical, social, cultural, and economic aspects is ideal. Recreation, camping, and outdoor education courses and those involving outing activities can be one point of departure in focusing on the real problems of the environment.

Recreational demands for improved facilities, a wider range of outdoor activities at established sites, or increased parklands may have been advocated by many of us. But have we considered the impact such demands may have on the total environment? For example, will development of a large, rural campground cause a decrease in the size, beauty, and refreshing qualities of the surrounding natural area; demand activities and facilities incompatible with the land capabilities; result in more roads, cars, people, and possibly pollution than the area can adequately support; place inordinate restraint, both financially and socially, on some individuals who wish to use the facilities; or cause emotional or psychological problems, not only for those who use the area but also for those who are restricted from using it?

Questions such as these cannot be solved overnight. Nevertheless, study of such situations can and should make one aware of the environmental problems as well as the management requirements and alternatives available to achieve environmental equality.

Numerous books, audiovisual media, and programs are available to start us thinking and acting. The following references emphasize materials and audiovisual aids to help students and adults become aware of some environmental problems and possible paths to their solution. They are especially pertinent to recreation, camping, outdoor education, and natural resource management interests.

General

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DeBell, Garrett, ed. *The Environmental Handbook.* New York: Ballantine, 1970.

Ehrlich, Paul. *The Population Bomb.* Rev. ed. New York: Ballantine, 1971.

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President's Council on Recreation and Natural Beauty. *From Sea To Shining Sea: A Report on the American Environment – Our Natural Heritage.* Washington, D.C.: U.S. Government Printing Office, 1968.

Rienow, Robert and Rienow, Leona. *Moment in the Sun.* New York: Ballantine, 1969.

Udall, Stewart. *The Quiet Crisis.* New York: Holt, Rinehart & Winston, 1963.

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U.S. Department of the Interior. *Conservation Yearbooks.* Washington, D.C.: U.S. Government Printing Office, 1965-1971. *Quest for Quality, The Population Challenge, The Third Wave, Man . . . An Endangered Species? It's Your World, River Of Life, Our Living Land.*

Guides

Association of Classroom Teachers and American Association for Health, Physical Education, and Recreation. *Man and His Environment: An Introduction to Using Environmental Study Areas.* Washington, D.C.: National Education Association, 1970.

Citizens Advisory Committee on Environmental Quality. *Community Action for Environmental Quality*. Washington, D.C.: U.S. Government Printing Office, 1970.

Knapp, Clifford. *Outdoor Activities for Environmental Studies*. Dansville, N.Y.: Instructor Publication, 1971.

National Park Foundation. *Adventure in Environment – Teacher's Guide; Outdoor Book; Student's Book*. Morristown, N.J.: Silver Burdett Co., 1971.

National Park Service. *National Environmental Study Area: A Guide*. Washington, D.C.: U.S. Government Printing Office, 1970.

Resource Materials

Audubon Nature Bulletins. National Audubon Society, Educational Services, 950 Third Ave., New York, N.Y. 10017. Sale $12/complete set; individual guides available. Set of 70 informative guides with line drawings and photographs covering animals, insects, plants, conservation, ecology, teaching aids, and flannel board uses.

Audubon Nature Charts. National Audubon Society, Educational Services, 950 Third Ave., New York, N.Y. 10017. Sale $8. Eight decorative chart/posters on conservation, ecology, mammals, trees, birds, and wildflowers.

Audubon Study Programs. National Audubon Society, Educational Services, 950 Third Ave., New York, N.Y. 10017. Sale $10/complete set; $2.25 each. Set of 5 programs stressing discovery of birds, trees, plants, mammals, and ecology. Each program contains study booklet, leader's guide, and wall chart.

Conservation, 1965. American Petroleum Institute, 1801 K St., N.W., Washington, D.C. 20006. Picture discussion kit with 7 displays of natural resources topics.

Discovering Your Environment. Interstate Printers & Publishers, Inc., 19 N. Jackson St., Danville, Ill. 61832. Set of 18 spirit-duplication masters listing questions and projects for students to complete. Exercises are for environmental learning experiences on the school grounds.

Earth Corp Study Program. Scholastic Book Services, Inc., 904 Sylvan Ave., Englewood Cliffs, N.J. 07632. Sale $24/unit. Activity oriented teaching units with teacher's manual, 24 student activity books, transparencies, large posters, student certificates, record, song sheets, and photos. Environmental/awareness units: "Look Around You" and "First Follow Nature." Ecology/conservation units: "We Need Each Other," "Earth Is My Home," and "Sharing The Earth."

Ecology Kits, 1970. Urban Systems, Inc., 1033 Massachusetts Ave., Cambridge, Mass. 02138. Sale $6/kit. Each kit contains an

educational booklet and experimental supplies. "Why Are Leaves Green?" "Life In The Water," "Predator Prey," "What Moves Life?" "Life From Death," "Can I Drink The Water?" "Can I Breathe The Air?" and "How Fish Breathe."

Environmental Action, 1971. Continental Can Company, 633 Third Ave., New York, N.Y. 10017. Sale $7.50/kit 1; $12.50/kit 2. Two activity oriented, environment/ecology kits for students – "No Time To Waste" and "Recycling Resources." Each kit includes student handbook, color filmstrips, record, simulation game, and teacher's manual.

Environmental Units, 1972. National Wildlife Federation, 1412-16th St., N.W., Washington, D.C. 20036. Sale $1 to $1.50/title. Twenty-six units of experiment-observation-conclusions to develop awareness of ecological relationships.

Examining Your Environment Series, 1971. Mine Publications, Inc., 25 Groveland Terrace, Minneapolis, Minn. 55403. Sale $3.39 /booklet. Full color activity booklets for students – *Pollution, Trees, Running Water, Mini-Climates, Snow and Ice*, and *Birds*. Other booklets in preparation.

How Man Pollutes His World, 1971. National Geographic Society, 17th & M Sts., N.W., Washington, D.C. 20036. Poster of the original painting. Sale $2 on paper, $3 on plastic.

Instructor Ecology Series – Set 1, 1970. The Instructor Publication, Inc., 7 Bank, Dansville, N.Y. 14437. Twelve large posters depicting ecological cycles. Teacher's guide included.

Man In His Environment, 1970. Coca-Cola Bottling Co. (local address). Free. Classroom ecology kit stressing interdependence and limitation of resources. Two exercises – "Rescue in Space" and "Make Your Own World." Contains large playing board, wall charts, booklets, pads, cards, and teacher's manual.

Nature Study Tips. American Nature Study Society, c/o John Gustafson, Homer, N.Y. 13077. Sale $2.50. Packet of 29 nature study projects and tips and 24 nature photos.

1971 EQ Index, 1971. National Wildlife Federation, 1412-16th St., N.W., Washington, D.C. 20036. Sale $10/complete kit; Reference guide $1. Kit contains filmstrip, record, printed narration, community action programs, EQ question index, and reference guide about environmental quality.

Simulation Board Games

Dirty Water, 1970. Urban Systems, Inc., 1033 Massachusetts Ave., Cambridge, Mass. 02138. Sale $10. Acquaints players with problems of water pollution and requires decision making for water quality control.

Ecology, 1970. Urban Systems, Inc., 1033 Massachusetts Ave., Cambridge, Mass. 02138. Sale $10. Players try to achieve a balance between man's activities and the natural environment while advancing through four periods of development.

Extinction: The Game of Ecology, 1970. Sinauer Associates and Publishers, Inc., 20 Second Ave., Stamford, Conn. 06905. Ecological events and survival of a species are simulated.

New Town, 1971. Harwell Associates, Dover, N.J. 07801. Sale $12. Modern town planning in which environmental considerations are pitted against greed. Also available as advanced college game and educational kit for high schools and clubs.

Pollution. Houghton Mifflin, 53 W. 43rd St., New York, N.Y. 10036. Sale $9. As players try to improve environmental quality, the profit motive complicates their efforts.

Smog, 1970. Urban Systems, Inc., 1033 Massachusetts Ave., Cambridge, Mass. 02138. Sale $10. Players act as local administrators dealing with problems of air pollution and city management.

Films

A Strand Breaks. 17 min., color (3). Illustrates importance of maintaining the natural balance of plant and animal life in an ecological community by showing what happens when that balance is destroyed.

America and the Americans. 51 min., color (4). Based on John Steinbeck's book and narrated by Henry Fonda, this comprehensive critique covers conservation, air pollution, and the destructive use of natural assets.

Environmental Awareness. 5½ min., color (8). Uses finger painting to present a dramatic, offbeat view of the effects of environmental pollution.

Islands of Green. 24 min., color (5, 6). Small islands of green near urban communities are needed together with larger national forests. Emphasis is on natural beauty and on using land for learning and enlightenment.

The Myths and The Parallels. 27 min., b&w (6). Reveals disastrous effects of man's abuse and waste of his heritage; offers practical steps toward solution.

Outdoor Education. 28½ min. (7). Illustrates how the school curriculum can be extended and enriched through the use of outdoor resources and by teaching attitudes and skills necessary for satisfying outdoor pursuits.

The Sense of Wonder. 51 min., color (4). Demonstrates how all of us can hold onto and renew our inner strength by searching out the ways in which we share the common bond of life with all things.

Silent Spring of Rachel Carson. 54 min., b&w (4). Stimulating and disturbing study of the promise and perils of widespread pesticide use.

The World Around Us. 25 min., color (4). Provides introduction to the science of ecology and its vital importance in today's world. Demonstrates what an ecosystem is, how life is interdependent, how man is the only animal that tampers with his environment, and discusses pollution and conservation.

Filmstrips and Slides

Crisis of the Environment. A series of 5 filmstrips (9). The series includes: *Man – An Endangered Species, Breaking the Biological Strand* (problems with technological advances), *Vanishing Species, Preserve and Protect,* and *The Population Explosion.*

Earth – Oasis in Space. Color, sd. (11). Sale $17.85. A 180 frame filmstrip for use with the Earth Corp Study Program. Compares earth to a spaceship of limited resources.

Environment of Man. Color, sd. (1). Two sets. Sale $59/set. The sets – "Ecology and Environment" and "Man and Nature" – examine the balance of nature as affected by man's growing technology. Each set contains 5 filmstrips and three records.

Environmental Awareness. Color, sd. (2). Sale $59.50/set with records; $69.50/set with cassette. The set contains five filmstrips: *Patterns in Nature, Colors in Nature, Textures in Nature, Awareness in the Forest,* and *Awareness in the City.* A teacher's guide accompanies each filmstrip.

Environmental Crisis: What the Individual Can Do. Color, sd. (7). Sale $15. Explores community action groups, returnable containers, detergents, mass transit, a return to the simpler life, and greater respect for nature. Companion leaflets are included with the filmstrip.

Man and His Environment: A New Approach to Environmental Education. Color, sd. (7). Sale $17. A filmstrip showing the use of environmental study areas with an interdisciplinary "strand" approach. Accompanying booklet.

Our National Forests. Color, sd. (10). Sale $11/mounted slides; $5.50/filmstrip. A 41 frame set for all ages showing multiple uses of national forests. Includes teacher's guide.

Film Distributors

1. AVI Associates, Inc., 825 Third Ave., New York, N.Y. 10022.
2. Centron Educational Films, 1621 W. Ninth St., Lawrence, Kan. 66044.

3. Encyclopedia Britannica Educational Corp., 425 N. Michigan Ave., Chicago, Ill. 60611.
4. McGraw-Hill Contemporary Film Rental Office, 330 W. 42nd St., New York, N.W. 10036.
5. Motion Picture Service, U.S. Department of Agriculture, Washington, D.C. 20250.
6. National Audubon Society, Photo-Film Department, New York, N.Y. 10028.
7. National Education Association, 1201 16th St., N.W., Washington, D.C. 20036.
8. National Park Service, U.S. Department of the Interior, Washington, D.C. 20240.
9. New York Times Book and Educational Division, 229 W. 43rd St., New York, N.Y. 10036.
10. Photo Laboratories, Inc., 3825 Georgia Ave., N.W., Washington, D.C. 20011.
11. Scholastic Book Services, Inc., 904 Sylvan Ave., Englewood Cliffs, N.J. 07632.

Gary Public Schools' Outdoor Education Program

MICHAEL FERYO

Michael Feryo received his B.S. and M.S. degrees from Indiana University, Bloomington, and has done advanced work in recreation. He served as the coordinator of the Gary Deep River Outdoor Education Center for six years. He is currently teaching physical education in the Gary public school system.

History and Discription

> "Learn in the classroom what best can be learned there, and that which can best be learned in the outdoors, through direct experience, should there be learned."

This statement is the basic philosophy for outdoor education as advanced by L. B. Sharp who completed the first doctoral study on outdoor education at Teacher's College, Columbia University, in 1929 and later established the famous Life Camps and National Camp in Northern New Jersey. His efforts in the early 1930s and 1940s are the forerunner of the present day outdoor education programs.

The Gary public school system, in Gary, Indiana, patterned its program of outdoor education, in essence, after the model established by the Kellogg Foundation in Battle Creek, Michigan. This program was developed through the imaginative leadership of Julian Smith, nationally prominent leader in outdoor education. The major difference is that the Gary program operates during the regular school day and does not offer overnight activities.

The unique approach of incorporating outdoor education activities as part of the regular school day, and dove-tailing the two curricula (outdoor education and the fifth grade curriculum) enhance the opportunities to provide unusual living experiences for each of the participating students.

Contributing to the beginnings of the Gary program, as early as 1925, were Guy Wulfing and Edward Werner, teachers who were instrumental in getting about 78 acres of land just outside the Gary city limits. An additional 66 acres adjacent to the original property were attained to create the 144 acre site which presently comprises the outdoor center, now known as the Deep River Outdoor Education Center. The 66 acres, leased from the county commis-

sioners, have a 40 acre barrow pit which has been allowed to fill with water. The area has been developed to include boating and fishing activities as well as to provide a natural setting to study the ecology of the lake.

A river (Deep River) with a dam runs along part of the northern boundary and provides an exciting opportunity for studies of ecology different from lake terrain. Included in the acreage is about 29 acres of prairie-type land, 37 acres of virgin timber with several different kinds of trees and other plant life. There are almost three miles of trails for hiking.

Until the spring of 1965, there was little opportunity to develop the outdoor center because no funds were available. However, the Elementary Secondary Education Act of 1965 provided a ray of hope. Efforts were initiated by Robert Antonacci, the supervisor of health, physical education and recreation for Gary at that time, to request federal funds for a planning grant under Public Law 89-10, Title III of the 1965 Act. The effort was successful and it was through the planning grant that the position of coordinator was established and provided the opportunity for the author to become involved in further developing this project.

Additional federal funds were received through an operational grant under Title III and were used for equipment, supplies, facilities and staffing needed to implement the outdoor education program. Included in the facilities for the program were: a building complex containing three classrooms, another building used as a classroom/nature center, a dining hall with kitchen facilities to serve lunches, an administration building, a caretaker's home, boathouse on the lake, a greenhouse, and three school busses.

Program Organization

At the beginning of the school year, principals and teachers of the fifth grade are provided with a bulletin which describes the activities and procedures for teacher and student participation in the program.

Each fifth grade class is scheduled to participate in the program for four school days during the school year. The trips to the outdoor center are scheduled in cycles of two days each. The intent is to schedule the classes to permit on-site activities at times which are seasonally different for each cycle.

Activities have been prepared in three basic study areas:

1. Plant life – how it affects our natural and man-made environment.
2. Birds and animals – how they affect our natural and man-made environment.
3. Soil and water – how they affect our natural and man-made environment.

An important aspect of each of the study areas is to involve the students in field work on the site. The classroom teacher, who accompanies each class, plays an important role as a team teaching member during the field work activities. The outdoor teacher, who is a specialist in his field of study, provides guidance for his teaching partner. The team works together to implement the specific activities of each group under the leadership of the outdoor teacher. Materials and guides for the classroom teacher are provided by the outdoor teachers during the course of each two day session.

During the four days at the outdoor center, each class rotates from one outdoor specialist to another, and thus is involved in all the activities. The classroom teacher tries to involve the students of her class in an effective follow-up program upon return to the home school. Field trips for other classes and groups are made by special arrangement.

The full compliment of staff requires the following personnel at the outdoor center: one coordinator, three outdoor teachers, three teacher aides, one secretary, one cook, three bus drivers, one caretaker, and one custodian.

The time schedule of a typical day at the outdoor center is as follows:

A. M.
8:30-9:15 Pick up and transport students from assigned schools.
9:15-9:30 Assemble for orientation of day's activities and flag raising ceremony.
9:30-11:50 Morning activities.
11:50-12:00 Clean up and prepare for lunch.

P. M.
12:00-1:00 Lunch.
1:00-3:15 Afternoon activities.
3:15 Board bus for return trip to home school.

Most activities at the outdoor center are project oriented to provide practical experiences in every day living. Numerous activities are designed to allow the students to learn by doing. Building bird houses, setting up feeding stations, testing soil and water, gardening, planting trees, and compass and nature trailing are examples of projects.

Recreation activities are integrated into the areas of study and include arts and crafts utilizing natural materials, boating and fishing, hiking the trails, archery and other activities which have carry over value in later life.

Based on the average daily attendance, approximately 7,000 students per school year participate in the outdoor education program. An additional 1,500 students visit the center on field trips.

The role of outdoor education as it relates to the environmental crisis of today and in the future is to provide insight into the great need for everyone to become concerned and aware of environmental problems. Many people get great pleasure and satisfaction from the environment, more or less just for itself, others for the many uses that can be made of it. Man must share in the responsibility to promote activities to insure a good environment whether his purpose is recreational or educational, for without the appropriate environmental conditions, neither can be had.

The Gary school system has continually moved forward in its efforts to update its curriculum to keep pace with the times. In keeping with the general philosophy of education, Gary now provides outdoor education and broader opportunities for each attending student to reach his full potential of personal development.

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Nature Series

Note: Over a hundred titles are available in the nature series listed below. Write to the publishers for a complete listing as the titles have not been duplicated in this section.

Dover Books on Nature, Dover Publications, Inc., 180 Varick St., New York, N.Y. 10014.
Golden Nature Guides, Golden Science Guides, Golden Field Guides, and *Golden Handbooks,* Golden Press, Inc., 850 Third Ave., New York, N.Y. 10022.
Life Nature Library (Time-Life Books), Silver-Burdett Co., 250 James St., Morristown, N.J. 07960.
The Peterson Field Guide Series, Houghton Mifflin Co., 2 Park St., Boston, Mass. 02107.

The Pictured-Key Nature Series, Wm. C. Brown Publishers, 135 S. Locust St., Dubuque, Iowa 52001.
Putnam's Nature Field Books, G. P. Putnam's Sons, 200 Madison Ave., New York, N.Y. 10016.
Quick-Key Guides, Doubleday & Co., Inc., 501 Franklin Ave., Garden City, N.Y. 11530.

Outing Activities Visual Aids

MILDRED J. LITTLE

Altered Environments Series: An Inquiry Into the American Woodlands. 1970, 16mm., 10 min., sd., color. (7).* Views various aspects of the American wilderness and asks questions which are intended to stimulate thinking about the past, present, and future value of the wilderness.

The American Island. 1969, 16 mm., 29 min., sd., color. (24). Portrays America's islands as the nation's last unspoiled resource.

The American Trail. 1968, 16 mm., 29 min., sd., color. (19). Explores the different trails in the U.S. ranging from walking trails in the city parks of New York and Chicago, to bicycle paths in the South, and horseback trails in the West.

America's Wonderlands – National Parks. 1969, 16 mm., 54 min., sd., color. (18). Includes scenes of the National Parks System throughout the United States and the Virgin Islands.

Boys in Conflict. 1969, 16 mm., 72 min., sd., b&w. (9). Documents the experience of a counselor in a camp for emotionally disturbed boys.

Campcraft – Series No. 1. 35 mm. filmstrips, sd. and si., color, Instructor's Guide. (5). Site and Sanitation, Food and Fire, Toolcraft, Orienteering.

Campcraft – Series No. 2. 35 mm. filmstrips, sd. and si., color, Instructor's Guide. (5). Gear, First Aid, Shelters, Trip Leadership.

The Camper and His Equipment. 1965, 35 mm. filmstrip, 36 fr., color. (21). Shows how to select a campsite, demonstrates procedure for packing a car, and arranging equipment at the campsite.

Camping – A Key to Conservation. 1964, 16 mm., 23 min., sd., color. (16). Shows the widespread misuse of public recreation facilities in order to emphasize the importance of learning good camping practices.

The Campsite. 1965, 35 mm. filmstrip, 38 fr., color. (21). Describes different types of campsites, demonstrates ways to set up camp, and discusses measures for safe camping.

Canoeing. 1965, 35 mm. filmstrip, 40 fr., color. (21). Demonstrates correct procedures for entering and leaving a canoe, packing a canoe, and taking care of a canoe.

*Numbers in parentheses refer to film distributors listed at end of article.

Colorado — Land of the Long Look. 1971, 16 mm., 30 min., sd., color. (12). Portrays the year-round recreational opportunities in Colorado.

Conservation and Our Forests. 1966, 16 mm., 15 min., sd., color. (7). Describes the various ways in which forests provide water, recreation, and wood products.

Conservation: Waterfall. 1969, 16 mm., 8 min., sd., color. (7). Follows the course of a waterfall from its source through the mountains and meadows to the formation of a valley lake. Includes scenes of glacier-carved rocks, wildflowers, meadows, rivers, brooks, and wildlife.

Conserving a Heritage. 1963, 16 mm., 16 min., sd., color. (2). Shows the efforts oilmen make to preserve fish and wildlife as they search for petroleum in the remote regions of the U.S.

Conserving Our Wildlife Today. 1968, 16 mm., 11 min., sd., color. (10). Explains the importance and usefulness of wildlife, and describes methods used by government agencies, individuals, and societies for wildlife conservation.

Edible Plants. 1967, 16 mm., 10 min., sd., color. (28). Illustrates the abundance of common edible and palatable plants surrounding campers in the wilderness.

Emergency Compass. 1967, 16 mm., 12 min., sd., color. (28). Shows how to find directions in daylight or darkness without the aid of a compass. Includes other camping tips.

Enjoy or Destroy. 1966, 16 mm., 27 min., sd., color. (21). A film designed to promote conservation of natural resources, wildlife and its habitat.

Family Camping. 1965, 16 mm., 28 min., sd., color. (21). Demonstrates five popular forms of family camping, progressing from the easiest site camping to hiking, canoe camping, cruise camping, and finally, trail riding.

Fundamental Canoeing. 1967, 16 mm., 10 min., sd., color. (28). Shows how to launch, paddle, carry, load, and enter a canoe safely. Illustrates what to do if a canoe capsizes.

Introduction to Forest Adventuring. 1964, 16 mm., 26 min., sd., color. (29). Discusses useful hints and techniques for camping in the woods. Describes the use of the compass and map, and the care and use of knife and axe. Demonstrates firebuilding techniques.

It's A Different World. 1969, 16 mm., 9 min., sd., color. (20). Uses music, sound effects, and photography to show the ease and pleasure of camping in national parks.

Kayak. 1971, 16 mm., 8 min., sd., color. (26). Portrays how the skillful kayaker works with the water of the river to experience

the thrill of being in the center of a force which is both kinetic and aesthetic.

More Than A Vacation. 1965, 16 mm., 17 min., sd., color. (4). Shows typical activities at the ***Herald Tribune*** Fresh Air Fund Camps for children of many cultural backgrounds, and describes the philosophy and the purposes of the camping program.

National Parks – A Road for the Future. 1969, 16 mm., 22 min., sd., color. (33). Shows natural scenes of 23 U.S. National Parks. Explains the philosophy and some of the regulations of the National Park system.

Our Endangered Wildlife. 1968, 16 mm., 51 min., sd., color. (18). Describes species of wildlife which are about to become extinct because of the lack of conservation; shows present-day conservation methods as applied by various agencies in the United States.

Our Land Needs Your Help. 1970, 16 mm., 13 min., sd., color. (3). Follows groups of young people as they explore their environment, clean a polluted stream bed, check erosion, plant trees, and collect waste materials that can be recycled and used to make new products.

Outdoor Cooking. 1967, 16 mm., 10 min., sd., color. (28). Describes in detail how to prepare a kitchen area in a winter camp and points out how to use Nature's natural resources to aid in personal comfort.

Paddle and Portage. 1966, 16 mm., 12 min., sd., color. (21). Features a paddleman with 35 years of experience demonstrating the art of canoeing from basic strokes to advanced techniques. Includes demonstrations on canoe rescue and water safety.

Patterns of the Wild. 1966, 16 mm., 28 min., sd., color. (31). Shows what proper wildlife management is doing to make the National Forests more livable for animals and birds, and more enjoyable for people.

Prepare for the Storm! 1967, 16 mm., 60 min., sd., color. (34). Explains how a family can survive in the hills and mountains with minimum equipment, and shows the activities of a wilderness survival seminar.

Problems of Conservation: Wildlife. 1970, 16 mm., 13 min., sd., color. (13). Explains the need for conservation of wildlife in order to preserve the ecological balance of nature.

Song of the Sandy Mooring. 1971, 16 mm., sd., color. (32). Presents nature scenes and encourages visits to national parks.

The Survival Kit, Part I. 1967, 16 mm., 10 min., sd., color. (28). Shows the first day of survival in the wilderness and explains how a small kit is designed to combat the seven enemies of survival.

The Survival Kit, Part 2. 1967, 16 mm., 10 min., sd., color. (28). Shows the second day of survival in the wilderness and explains how the survival kit continues to keep one alive.

These Things Are Ours. 1970, 16 mm., 26 min., sd., color. (6). Uses a walk through a wilderness area of the Midwest during each of the four seasons to examine a profusion of plants and animals and the destruction caused by insecticides and man-made hazards.

To Lighten the Shadows. 1964, 16 mm., 20 min., sd., b&w. (17). Shows mentally retarded children participating in camping activities; reveals the ways in which the children are like and unlike other children.

Use and Care of Axes and Knives. 1967, 16 mm., 10 min., sd., color. (28). Shows proper handling of sharp equipment and how to fell and limb trees without self-injury.

What Are We Doing to Our World? Part I. 1969, 16 mm., 27 min., sd., color. (18). Points out ways of conserving our national resources. Discusses air pollution, the population explosion, land usage, waste disposal, and insecticides.

What Are We Doing to Our World? Part II. 1969, 16 mm., 25 min., sd., color. (18). Points out ways of conserving our national resources. Defines ecology and studies the ecological problem of three sites.

Where We Seldom Wander. 1970, 16 mm., 14 min., sd., color. (12). A contemporary mood piece with ecological implications. Records the joy of a teenage girl who flees the hectic life of the city to the tranquility and the beauties of nature found in places rarely explored.

White Water Slalom. 1967, 16 mm., 18 min., sd., color. (27). Discusses canoe and kayak slalom racing in the eastern section of the United States; explains various paddle strokes and rules of slalom races.

Wilderness Nature Trails. 1967, 35 mm. filmstrip, 40 fr., color. (11). --Follows hikers as they penetrate the backcountry on park trails established by the National Park Service.

Wildlands, Our Heritage. 1969, 16 mm., 26 min., sd., color. (6). A photographic study of the wildlands revealing the drama and the comedy as well as the moods of the wilderness.

Winter World. 1960, 16 mm., 18 min., sd., color. (14). Demonstrates fundamental techniques for protecting oneself from freezing under outdoor winter conditions and describes a method of sleeping in a snow cave.

Film Distributors

(1) American Association of Health, Physical Education, and Recreation, 1201 16th St., N.W., Washington, D.C. 20036.
(2) American Petroleum Institute, 1271 Avenue of the Americas, New York, N.Y. 10020.

(3) Arthur Barr Productions, Inc., P.O. Box 7-C, Pasadena, Calif. 91104.
(4) Association Films, Inc., 600 Madison Ave., New York, N.Y. 10022.
(5) Athletic Institute, 805 Merchandise Mart, Chicago, Ill. 60654.
(6) A-V Explorations, Inc., 505 Delaware Ave., Buffalo, N.Y. 14202.
(7) BFA Educational Media, 2211 Michigan Ave., Santa Monica, Calif. 90404.
(8) CBS, Inc., 485 Madison Ave., New York, N.Y. 10022.
(9) Center for Mass Communication of the Columbia University Press, 440 W. 110th St., New York, N.Y. 10025.
(10) Coronet Instructional Films, 65 E. South Water St., Chicago, Ill. 60601.
(11) Curriculum Materials Corp., 1319 Vine St., Philadelphia, Pa. 19107.
(12) Eastman Kodak Co., 343 State St., Rochester, N.Y. 14650.
(13) Encyclopaedia Britannica Educational Corp., 425 N. Michigan Ave., Chicago, Ill. 60611.
(14) Film Originals, Box 4072, Boise, Idaho 83705.
(15) Herbert Kerkow, Inc., P.O. Box 134, Pawling, N.Y. 12564.
(16) Indiana University Audio-Visual Center, Bloomington, Ind. 47401.
(17) International Film Bureau, Inc., 332 S. Michigan Ave., Chicago, Ill. 60604.
(18) McGraw-Hill Book Co., 330 W. 42nd St., New York, N.Y. 10036.
(19) Modern Talking Picture Service, 1212 Avenue of the Americas, New York, N.Y. 10036.
(20) Montgomery Ward and Co., Audiovisual Section, 619 W. Chicago Ave., Chicago, Ill. 60609.
(21) National Film Board of Canada, Reference Library, P.O. Box 6100, Montreal, Que., Canada.
(22) National Geographic Society, 17th and M Sts., N.W., Washington, D.C. 20036.
(23) National Education Association Sound Studios, 1201 16th St., N.W., Washington, D.C. 20036.
(24) National Television News, NTN Quality Films, 6016 Falbrook Ave., Woodland Hill, Calif. 91364.
(25) Public Media, Inc., 1144 Wilmette Ave., Wilmette, Ill. 60091.
(26) Pyramid Films, Div. of Adams Productions, P.O. Box 1048, Santa Monica, Calif. 90406.
(27) Sanderling Films, 2401 Washington St., Canton, Mass. 02021.
(28) Sterling Educational Films, Inc., 241 E. 34th St., New York, N.Y. 10016.

(29) Syracuse University College of Forestry, Syracuse, N.Y. 13210.
(30) Thorne Films, Inc., 1229 University Ave., Boulder, Colo. 80302.
(31) U.S. Dept. of Agriculture, Motion Picture Service, Washington, D.C. 20250.
(32) U.S. Dept. of the Interior, National Park Service, Washington, D.C. 20520.
(33) United States Educational Films, 17414 Devonshire St., Northridge, Calif. 91324.
(34) Wilderness Survival Seminars, Rte. 3, Portland, Tenn. 37148.

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Jam Can Curling, Anyone?

VERA RIMNAC

Vera Rimnac is an assistant professor of physical education at the University of Wisconsin – Stevens Point. She is interested in curriculum development and expanding course offerings at all levels. Her interest in curling developed when she began teaching at the university. Currently she has been instructing curling in the college service program.

Are you looking for a new winter activity to enliven your physical education curriculum? Perhaps you've ruled out the possibility of curling because of time and transportation difficulties. Or perhaps you've found that the traditional game of curling requires elaborate facilities and expensive granite stones not always available to the local school. Why not try jam can curling?

In Canada curling rinks are as common as our basketball hoops, and our neighbors to the north have improvised facilities and equipment for an amateur game of jam can curling.[1,2] The rules of the game are basically the same as those for the traditional sport. The improvisation of rink and stones requires some creativity. Your school may be located near a frozen pond, flooded park area, or perhaps your custodians may be able to flood an area behind your building. The point is, you *can* teach curling without a regulation rink and stones if you are the least bit resourceful.

The Rink

If you can locate a bump-free area of ice (sheet) at least 40 to 60 feet long and 8 to 10 feet wide you'll have a jam can curling rink. Scoring rings are laid out at one end of the sheet, although in the early stages of this sport a mere stake may serve as the target. A jam can curling rink usually has a goal (house) at one end of the rink only. The house may have three to four concentric scoring rings, 18, 36, and 54 inches in diameter or 12, 36, 60, and 84 inches in diameter respectively; the number of rings is determined by the size of your sheet of ice. These rings may be scratched into the ice by three or four nails spaced accordingly along a board which is pivoted in a complete circle. Of course the rings could also be marked by

[1] Charles A. Barbour, "Jam Can Curling," *Recreation* 58:64 (Feb. 1965).
[2] Gunnar A. Peterson and Harry D. Edgren, *The Book of Outdoor Winter Activities* (New York: Association Press, 1962), pp. 92-94.

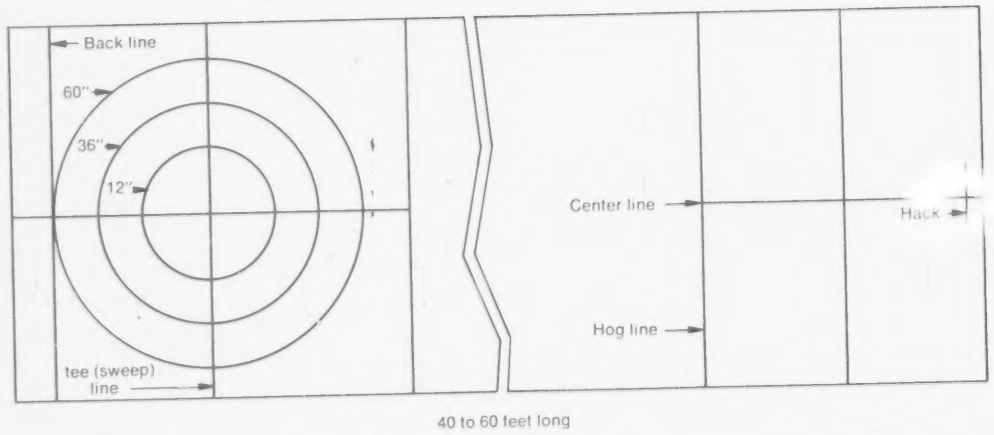

Figure 1. Modified rink for jam can curling.

pounding a nail into the ice in the center of the house (tee), attaching a string of the desired length with another nail at the other end for marking a complete circle.

The foot brace (hack) may be improvised by merely chipping out a small hole in the ice just large enough for the toe and ball of the boot. The hack is at the opposite end of the sheet from the goal. A slab of wood about a foot long may also be imbedded in the ice for a firm foot brace from which to deliver the stone.

The boundary lines – tee line, hog line, center line, sweep line, and back line – are the same as on a regulation rink, only adjusted to the smaller dimensions. All lines on the rink may be further distinguished by dripping a solution of laundry bluing, food coloring, water paint, or ink to color them. A watering can for house plants with a narrow spout may be a helpful liner.

Homemade Rocks

Another challenge to the imagination is the improvisation of a stone. Early curlers dredged their equipment from the bottom of streams or from the shores of lakes and ponds where they found smooth, well-worn rocks. Later, huge cumbersome boulders with finger holes were used, and eventually, handles were inserted.

Although a rock hunt by your students might be interesting and challenging, a more likely approach would be to build your own. The Canadians have solved this problem by using a four-pound jam can for the basic form – hence the name of the game. Surely a large coffee can would be an adequate substitute, as would fish pails, minnow buckets, or plastic containers. Each can may be filled with concrete to within an inch of the top, or the cans may be filled with water and frozen. Occasionally the ice may force the bottom of the can to bulge; this can be remedied by using the large end of a baseball bat to round out the bottom so the stone will glide smoothly. For identification purposes the cans may be painted red or blue or the handles may be decorated with a pom pom of the appropriate color.

The handles may be improvised by inserting a bent bolt or spike at least four inches into the cement in the center of the can. The handle grip should be at least five inches long.

Wooden stones have also been constructed from stovewood 6 to 10 inches in diameter and 3 to 5 inches high, and wrapped with stovepipe wire to prevent splitting. The bottom rim of a wooden stone needs to be slightly rounded with a plane for smoother gliding.[3]

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[3] *Ibid.*

Thus, with a little ingenuity and resourcefulness you can teach all the rules, courtesies, and traditions of curling, and develop a lifetime interest in this age-old sport right in your schoolyard. Good curling, you jam canners!

An Overview of Curling

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Selected Glossary Of Curling Terms

BACK BOARD: Border at extreme end of "sheet"
BACK RING: Diameter of circle behind the "tee" (12 ft)
BACK SCORE: Straight line, parallel to "sweeping score" back of circles
BIG END: Score of four or more points in one "end"
BITER: Stone just touching outside of the circle
BONSPIEL: Tournament, when a number of teams play in several events
BURNED ROCK: A moving stone touched by the broom of a sweeper
BURY A STONE: Curl in behind a guard
CENTER LINE: Line drawn on ice from "hack" to "hog"
CHAP AND LIE: When played stone strikes edge of another stone and moves to another position in goal
CHIP: (See "wick.") When played stone nicks edge of another stone
CLOSING A PORT: Blocking an opening between two stones
COMING HOME: Playing the last regulation end
COUNTER: A stone lying closer to the "tee" than any opponent's stone
CROSS HANDLE: When handle of stone is held at a right angle to target
CUP (OF STONE): Concaved area inside the five-inch running edge on bottom of stone
DOUBLE: Removal of two opposing stones with one shot
DRAW: Lateral swing of stone during its movement up the ice (amount of arc)
DRAW WEIGHT: When stone travels as far as inner rings of "house"
END: Inning, or division of a game, played from one end of the sheet to the other
FREEZE: When stone has just enough momentum to stop when just touching another stone
FRONT RING: Diameter of circle in front of "tee" (12 ft)
GUARD: A stone in front of another stone
HACK: An immovable brace for the foot in or on the ice at point of delivery – provided on each side of center line for right and left handed players

HEAD: Goal or "house"
HEAVY: A stone delivered with more than desirable weight
HEAVY ICE: Ice that, because of water, frost, or too much pebble, requires a stone to be thrown with extra weight to reach the rings
HOG: When played stone fails to clear "hog line"
HOUSE: Goal, designated by circles
IN-TURN: Stone turning clock-wise while traveling
IN-WICK: When played stone strikes inside of objective stone causing former to move toward "tee"
LEAD: Member of team playing first stones for his side
LIGHT: A stone delivered with insufficient weight
NARROW: Stone played "off the broom" on side between skip's broom and objective
OFF THE BROOM: Stone not played toward skip's broom
ON THE BROOM: Stone played directly at skip's broom
OUT-TURN: Stone turning in counterclockwise direction
OUT-WICK: When played stone strikes outside of objective stone
OVER DRAW WEIGHT: Stone having enough momentum to reach rings behind "tee" line
PAT LID: Stone that comes to rest in center of goal
PEBBLE: Roughening of ice surface by mist-spray after flooding (This allows air to enter "cup" on bottom of stone.)
PINCHING THE BROOM: Narrow of the skip's broom
POCKET: Semicircular position of stones concentric to rings
POINTS GAME: Practice game wherein typical shots are set up, played and scored according to accuracy
PORT: Opening between two stones sufficient to allow another stone to pass through
PROMOTION: Hitting a stone, causing it to be advanced
PULL: The amount or distance a stone will curl during its journey down the ice
RINK: Two meanings, 1) group of players making up team, 2) "sheet" of ice
ROCK: Another term for "stone"
ROCKER: A fast stone that rocks as it moves down the ice
ROLL: Any movement of stone after striking another
RUB: (See "chip".)
RUN: A tricky spot on the ice where the stones back-up or change course as they pass over the area
RUNNER: Fast moving stone – usually for a "take out"
SECOND SHOT (STONE): Second stone nearest "tee"
SHEET: Ice area on which game is played
SHORT: A rock that stops short of its desired destination
SHOT ROCK: Stone lying closest to center of goal
SKIP: Captain of team players

SLIDE: Forward movement of player delivering a stone
STRAIGHT HANDLE: Stone traveling without revolving motion as in case of "in-turn" or "out-turn"
STRATEGY: Plan of play conceived in the mind of the skip
STRIKING: When played stone hits another stone removing it from play
SWEEPING SCORE: Line drawn through center of goal at right angles to "center line"
SWINGY ICE: When "draw" or arc of traveling stone is greater than usual
TAKE OUT: "Striking" a stone hard enough to remove it from rings
TARGET: Skip's broom held at goal designating direction in which stone is to be played
TEE: The exact center of the goal
TEE LINE: The horizontal line bisecting the rings
THIRD: "Vice-Skip" – player delivering third pair of stones for his side
WEIGHT: Speed at which stone is delivered
WICK: (See "chip.") When stone strikes edge of another stone
WIDE: Stone played "off the broom," outside of skip's broom away from objective
WOBBLER: Stone that rocks from side to side as it travels – not resting squarely on its running surface

Curling Etiquette and Hints

Team spirit, team cooperation, and good fellowship are fundamental attributes of curling. Curling possesses a culture which inculates the finest principles of sportsmanship and comradeship. It is based on *team* play, and the game depends on the united effort of all four players on the team. The contribution of each is equally important to success.

Know the rules and never deliberately break them. Should you do so inadvertently, and become aware of it, be the first to divulge the breach.

Be on time. Clean your shoes carefully before going on the ice and always be ready to play, without delay, when it is your turn.

Clean the bottom of your stone and the ice immediately in front of you before delivering a stone.

Be sure you know what your skip wants – Turn, weight, and objective. Then keep your eye on the skip's broom, relax, and deliver your stone smoothly and confidently. Please do not drop stone in releasing it. Cracked ice in front of the hack affects all other players.

Most skips call ice for a normal delivery under which the stone makes four or five turns. Please do not throw "spinners," "rockers," or "straight handles."

Do not speak to your opponent when he is ready to play. Let him concentrate on his shot. Do not kid another player about his bad shot, and do not be elated over a fluke or crab about a bad shot.

Players should keep out of the rings unless sweeping, and must not sweep past the center line. The skip or vice-skip (when acting as skip) is the only player permitted to sweep or stand behind the center tee line.

Do not cross the ice when there is a player in the hack. Arrange your sweeping positions in advance to avoid crossing back and forth. Do not move when any player is delivering his stone.

While sweeping across the course of the stone, be careful not to touch the stone in play – or any other stones on the ice – and leave your skip a view of the stone at all times. Proper sweeping materially affects the speed and curl of the stone. Therefore, you should endeavor to understand and perform your skip's orders. At the conclusion of an end, do not move any stones until the vice-skips have agreed upon the score.

Let your skip do the "skipping" – unless he asks for your advice.

If you smoke during a game, please see that matches, etc., are deposited in the receptacles provided for this purpose.

Any member of a rink should feel free to discuss strategy with his skip before or after (not during) a game. It helps the skip and the rink if all members understand strategy, and in particular their skip's strategy, which may change during the game.

When skipping, stand still and keep your broom behind you while the opposing skip is directing the play of his stones. Do not destroy the morale of a player by criticism. Everyone, including yourself, makes bad shots. Be governed at all times by a spirit of good sportsmanship and fair play.

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Thin Ice. Canadian Figure Skating Association, British Columbia Section, Vancouver 9, B.C., Canada.

Skating Audiovisual Aids

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Films

Beauty and the Blade. 1948, 16mm., 9 min., sd., b&w. Daily rental (6) or $35.00 for a three-year license (4).* Barbara Ann Scott demonstrates the skating skills with which she won the Olympic Figure Skating Championships. The film emphasizes the learning and practicing of techniques and concludes with scenes from an ice show.

Figure Skating. 1963, 16mm., 15 min., sd., color. Rental $5.30, #51202 (6). Sale $150.00 (3). This is an effective promotional film designed to interest persons of all ages in figure skating. Demonstrations by youngsters and Canadian champions are included.

Figure Skating Loops Series. 16mm., si., b&w. Sale $1.00 per loop (5).

1. Basic Skating Techniques – 37 loops
2. Free Skating – 25 loops
3. Dancing on Skates – 18 loops.

Each loop demonstrates a single technique or figure from start to finish. The complete title list is available (5). Also, an illustrated manual may be purchased from the Queen's Printer, Ottawa, Canada.

Figure Skating Filmstrip Series. 35mm., si., b&w. (3,6). Illustrates the basic techniques of skating in such a way that details may be observed and learned.

1. Equipment and Basic Skating – 32 frames $3.00
2. Singles and Pairs – 32 frames $3.00
3. Dancing on Skates – 35 frames $3.00.

Free Skating. 16mm., sd., $10.00 (5). Presents examples of well-balanced figure skating programs by six experts. The film was prepared by the Eastern Section of the Judging Standards Committee as an aid in the training of judges. It shows the use of jumps, spins, dance steps, individual and original moves, pace, and mood.

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*Numbers in parentheses refer to film distributors listed at end of article.

Ice Skating. 1969, 35mm., color. Filmstrip kit, 33-1/3 rpm records of narration. Rent $2.50 (2). Sale $49.75 sd., $44.75 si. (1). Four Units.

Unit I: Fun, Speed, and Beauty. Includes the history of ice skating, meanings, the beauty, skill terms, selection of equipment, use of equipment.

Unit II: ISIA Alpha Award Exercises. Considers the figure skate, basic fundamentals, positions on the ice, safety, skating balance, gliding exercises, walking positions.

Unit III: ISIA Beta Award Exercises. Includes four award exercises, backward stroking, crossover strokes, "T" stop.

Unit IV: ISIA Gamma Award Exercises. Demonstrates skating circles, different foot turns.

Introduction to the Art of Figure Skating. 1940, 16mm., 11 min., sd., b&w. Rental $2.40, #00734 (6). Barbara Ann Scott demonstrates the fundamentals of figure skating. Film includes a brief discussion of edges and basic figures, an analysis of several complex turns, and some free skating.

Introduction to Figure Skating. 16mm., 25 min., sd., color. Rent $4.50 (7). An instructional film, explains and demonstrates basic knowledges, skills, and figures. Film concludes with a short demonstration of pair skating. Suggested use is for high school and college physical education classes.

National and World Figure Skating Championships. USFSA official films. 16mm., approx. 35-40 min., sound, (5). Send for annotated film list. National Championships, 1957 to present. Seventy different films. Rental fees range from $7.50 to $20.00 each. World Championships, 1957, three films. Rental $7.50 each.

Safety in Winter. 16mm (9).

The Ten-Fox Film. 1961, 16mm., 25 min., sd., b&w. Sale $50.00; Rent $10.00 (5). This is an instructional film on ice dancing produced by the U.S. World Skating Team Memorial Fund Committee. Includes demonstrations of movements in both regular speed and slow motion to help viewers in judging and in learning the Ten-Fox.

This is Curling. 16mm., sd., color, 20 min., free loan from the American Curling Foundation, P.O. Box 145, Utica, New York 13502. Narrated by Glenn Harris of the Superior, Wisconsin, Curling Club, this is an excellent introductory film for beginning curlers. Includes instructions on the basic skills of the sport and demonstrations by the men of the Superior Curling Club Championship Rink, 1968 and 1969.

Wilkinson Fundamentals: Figure Skating. 16mm (8).

Audiovisual Material

Ice Dance Music. Twenty correct tempos. Ralph Melady, Jomel Productions, 138 E. 53rd St., New York, N.Y. 10022.

Film Distributors

(1) Athletic Institute, 805 Merchandise Mart, Chicago, Ill. 60654.
(2) Ideal Pictures, 273 Delaware Ave., Buffalo, N.Y. 14202.
(3) National Film Bureau of Canada, P.O. Box 6100, Montreal, Que., Canada; or 680 Fifth Ave., New York, N.Y. 10019.
(4) Teaching Film Custodians, Inc., 25 W. 43rd St., New York, N.Y. 10036.
(5) United States Figure Skating Association, Central Office, 178 Tremont St., Boston, Mass. 02111.
(6) University of Illinois, Visual Aids Service, Division of University Extension, Champaign, Ill. 61820.
(7) University of New Hampshire, Audio-Visual Center, Hewitt Hall, Durham, N.H. 03824.
(8) Sportlite Films, 20 N. Wacker Dr., Chicago, Ill. 60606.
(9) Coronet Films, 65 E. Southwater St., Chicago, Ill. 60601.

Injury Prevention in Skiing

MERRITT H. STILES, M.D.

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In skiing a distinction should be made between accident and injury. There are many circumstances that result in accidental falls – snow conditions, terrain conditions, the skier's maneuvers – almost all of which are the result of interaction between skier and terrain. Yet only a very small percentage of these accidents results in significant injury, providing, of course, injury to one's pride is discounted.

Terrain

Skiing is easiest on a smooth, gentle slope, although such a slope is not as safe as it might seem. Heavy, wet, deep snow, hard-packed snow, and breakable crust over soft snow are frequent causes of severe falls; most skiers avoid such conditions assiduously. Steep slopes are often covered with *moguls* (rounded mounds), which are a hazard, but also a help in turning for the experienced skier. When a steep slope becomes hard-packed or icy it introduces the risk of a prolonged and sometimes dangerous slide to the bottom of the slope if the skier should fall. In other snow conditions a steep slope may present the risk of avalanching. All of these hazards are greatly increased by fog or flat light, which obscures surface details. A large number of skiers, particularly beginners, concentrated in a small area introduce another hazard – collision with other skiers.

Ability

More important than snow and terrain, however, is the ability of the skier himself. Once past the basic instruction phase, many children quickly become competent by mimicking good skiers; however, most older persons progress more slowly. The difficulties are compounded if the skier is not in good physical condition. A study of leg fractures in 1967 to 1968 showed that the skier himself was the principle contributing factor in more than 75 percent of the accidents.[1]

[1] R. Garis, "Reducing Ski Injuries" (Paper presented at Winter Sports Safety Congress, Chicago, Ill., Oct. 28, 1969).

Physical Condition

Excellent physical condition is an important factor in safety as well as in the enjoyment of skiing. Preferably, conditioning should be continued all year – not just preseason. What might be called "mental conditioning" is important: education in the hazards of various snow conditions, and good judgment in the selection of runs and slopes to be skied under prevailing circumstances. Measures to lessen risk of ski injury are: slope grooming and maintenance, lift maintenance, trail and closed area marking, use of dependable equipment – including release bindings, knowledge of binding adjustment methods, adequate instruction and practice, education in ski rules of the slope, and good physical condition.

Types of Injuries

Types of injuries observed in one study are listed in Table 1. It was noted that the incidence of injury was higher in young skiers and lower in adults, with a slight rise in skiers over 50. Beginning skiers had a higher incidence of injury; the incidence declined as ability improved. Female skiers had significantly more injuries than male skiers.[2]

Table 1. Ski Injury Classification

Type of Injury	*% of Total*
Abrasions	2
Contusions	5
Lacerations	10
Musculo-tendinous	5
Ligamentous	39
Dislocations	3
Fractures	36

Rules of the Slope

In 1963 the major national organizations involved in skiing formed the National Ski Study Group, a nonpolicy-making, nondues-paying group composed of the heads of the member organizations. One of the study group's first activities was the formulation and promotion of Rules of the Slope, a skier's courtesy code (see Table 2). The study group encouraged lift safety codes, now in effect in most states having ski areas, and worked closely with the

[2] James G. Garrick, "The Epidemiology of Ski Injuries" (Paper presented at American College of Sports Medicine, Albuquerque, N.M., May 9, 1970).

National Ski Areas Association (NSAA) in establishing an international uniform trail classification and marking system, indicating relative trail difficulty.

Table 2. Rules of the Slope – A Skier's Courtesy Code

1. All skiers shall ski under control, in such a manner that a skier can avoid other skiers or objects.
2. An overtaking skier shall avoid the skier below him.
3. Skiers approaching each other on opposite traverses shall pass to the right.
4. Skiers shall not stop in a location which will obstruct a trail, not be visible from above, or impede progress of other skiers.
5. A skier entering a trail or slope from a side or intersecting trail shall first check for approaching skiers.
6. A standing skier shall check for approaching downhill skiers before starting.
7. When walking or climbing in a ski area, skis should be worn, and the walker or climber shall keep to the side of the slope.
8. All skiers shall wear straps or other devices to prevent runaway skis.
9. Skiers shall keep off closed trails and posted areas and shall observe all traffic signs and other regulations as prescribed by the ski area.

Instruction

Instruction is a major safety factor in learning to ski. Beginning skiers of mature years require patient and prolonged instruction with periodic brushing up even after they are relatively experienced. The Professional Ski Instructors of America has developed standard teaching techniques and student classification methods so that a skier may move from one school to another around the country with minimum adjustment.

Equipment

Modern skis are generally shorter, lighter, more flexible, and have smoother running surface. They are, consequently, easier to handle. Boots are higher and stiffer, providing better edge control, but at the same time contributing to the complication of boot-top rather than ankle fractures. The most important equipment item in injury prevention is the binding which fastens the ski to the boot. Modern release bindings, properly adjusted, will usually release the boot from the ski in a high-speed fall, particularly on a steep slope. A fall on a gentler slope, at slower speed, may not produce the force needed to release the boot if the ski tip becomes buried and the

resultant slow, twisting fall may cause injury. Moreover, even the best binding may be of little value unless it is properly adjusted.[3,4]

Efforts to lessen injury have produced favorable results. For example, Mount Tom Ski Area, Holyoke, Mass., has provided a checking and adjustment service for bindings, without cost, to 25,000 skiers (see Table 3).[5]

Table 3. Comparative Injury Statistics
Mt. Tom Ski Area, Holyoke, Massachusetts

Years	MDS*	Injuries Number	Rate per 1,000 MDS	Fractures Number	Rate per 100 MDS
1960-65	438,022	2,126	4.85	324	0.74
1966-67	120,613	489	4.05	83	0.68
1967-68	102,940	368	3.58	68	0.66

*Man days skiing.

Slope Maintenance

When asked why he was packing out so many more runs and slopes than in earlier years, Robert Parker, Marketing Manager of the Vail, Colorado, ski area, stated, "We feel it is an important safety measure; our injury rate is down from 3.72 per 1,000 ski man days to 2.6." Dr. James Garrick, however, was of the opinion that the most important contributing factor, accounting for about half the improvement, was the improved proficiency of the average skier.[6]

Individual ski area operators play a major role. Safety is promoted through slope maintenance – grooming to remove rocks, brush piles, and other obstacles; packing deep snow so it can be negotiated more easily by the average skier; cutting down moguls; and breaking up and dragging runs that have become too hard-packed or icy.

Reading

Copello, P. "How Safe is Skiing? *Western Ski Time* 3:16-17 (Dec. 25, 1968).

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[3] G. C. Lipe, "Factual Evidence of Errors and Omissions which Produce Release Binding Malfunction" (Paper presented at Northwestern Medical Association, Sun Valley, Idaho, Feb. 10, 1970).

[4] John O. Outwater and C. F. Ettlinger, "An Engineer Looks at Ski Bindings" (Paper presented at Winter Sports Safety Congress, Chicago, Ill., Oct. 28, 1969).

[5] Robert D. O'Malley, "A Ski Area's Approach to Safety" (Paper presented at Northeastern Medical Association, Vail, Colo., Mar. 2, 1970).

[6] Garrick, "Epidemiology of Ski Injuries."

Ski Conditioning for the Noncompetitor

DORABETH PARSONS

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Conditioning, or "getting into shape," is a much discussed topic among ski buffs. There is a lot of printed information available on conditioning. Every year people in ski classes, on the ski slopes, or on their way to the first aid shack have ignored or are unaware of the importance of conditioning. Much can be done to counter this lack of fitness prior to the season.

The reasons skiers fail to condition themselves are varied. Very few people voluntarily go through all the discomfort of conditioning simply because it's good for them. Most students want to know why they should perform certain conditioning routines or exercises. Hence, a sound scientific reason for the inclusion of each exercise or specific workout should be provided. Students no longer accept the statement, "Do it, it's good for you." Some reasons students frequently list for wanting to take the conditioning classes are: a fear of injury, a desire to reduce fatigue, and a desire to gain control at high speeds or in unpacked snow.

Injury statistics show that knee and ankle sprains are higher on the casualty list than fractures.[1] It is doubtful that a conditioning class can prevent broken bones unless a portion of the class is devoted to equipment conditioning. Another common injury is a detached Achilles tendon. This type of injury might be lessened through increased dorsi-flexion of the foot by increasing the range of motion at the ankle. Knee and ankle sprain prevention call for strength in the upper and lower legs.

Fatigue rate and general strength can be improved by a combination of endurance exercises such as those suggested by Kenneth Cooper.[2] The application of the overload principle is

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[1] Merritt H. Stiles, "Injury Prevention in Skiing and Snowmobiling," *Northwest Medicine* 71:29-32 (Jan. 1972).
[2] Kenneth H. Cooper, *Aerobics* (New York: M. Evans & Co., 1968).

necessary to build strength. This additional strength usually adds stability to the joints.

Although most ski instructors agree to the inclusion of strength and endurance exercises in the program, there is a difference of opinion on the importance of developing flexibility. It is my opinion that many injuries could be lessened or eliminated if the skier had good flexibility as well as the stability provided by strength. For example, consider the student who cannot bend over to adjust his bindings. Is he overweight? Is he wearing too much tight clothing? Does he lack flexibility in the lower back and legs? Remember the times you have caught an uphill inside edge and the downhill ski kept going? Have you ever fallen directly forward over your ski tips or run into a snow bank head on and not come out of your bindings? Strength or endurance would do little to prevent damage done in these situations. Flexibility is needed!!

Program

The following program has been used at Eastern Washington State College with considerable success. Principles of endurance, strength, and flexibility conditioning are outlined for the student. Cooper's time limited endurance techniques are employed, deVries' strength guidelines are used, and sustained stretch techniques incorporating Yoga and dance exercises are used for flexibility.[3,4,5,6]

The first few days are spent in pretesting, using Cooper's 12-minute run. Many students will not push themselves to their phusical limit, and the psychological readiness necessary for maximum output usually takes some time to develop. Next, a series of flexibility tests, devised by Dale R. Nelson at Utah State University, are administered.[7] Last, a timed wall-sit and a three-minute Harvard Step Test are given. The step test is used again later as a fitness indicator and as an exercise.

Each student is issued a conditioning record card on which he records all pretest information. This gives the student knowledge of his present condition which serves as a starting point for devising his workout schedule. Generally, everyone needs to work on increasing cardiorespiratory endurance. In addition, men usually need emphasis on flexibility, while women need emphasis on strength for stability.

[3] Ibid.
[4] Herbert A. deVries, *Physiology of Exercise for Physical Education and Athletics* (Dubuque, Iowa: Wm. C. Brown Co., 1966).
[5] Elizabeth R. Hayes, *An Introduction to the Teaching of Dance* (New York: Ronald Press Co., 1964).
[6] Jess Stern, *Yoga, Youth and Reincarnation* (New York: Doubleday, 1971).
[7] Dale R. Nelson, *Special Exercises for Physical Fitness* (Salt Lake City: Mercury Publishers, 1964).

A common core of exercises is then taught to everyone. The repetitions, length of time, or weight loading per exercise varies with each person. Each workout also includes at least one 12-minute run. Boredom and monotony are combated by changing the site of the run from the indoor track to the stadium stairs, to an outdoor trail with up and down slopes, to stairs, or to flat terrain. Running up and down rough terrain quickly adds strength to the legs in addition to improving cardiorespiratory endurance.

The strength exercises are confined to the lower limbs unless the student has special requests. The strength core usually includes a wall-sit, demipliés, relévés (with and without additional weights), and a forward body lean from the knees. Exercises on the universal gym and in the progressive weight rooms are introduced about halfway through the course.[8]

The flexibility exercise series is taken from Hatha Yoga positions and modern dance techniques. The dance exercises are similar to those found in any beginning modern dance or ballet text.[9]

Variations

One of the most difficult elements to overcome in the conditioning class is drudgery. Even the most motivated students have slump days. Swiss Mountain music often can set a stimulating atmosphere. Some polkas, however, set a pretty grueling pace, and should be omitted or saved for the second half of the course. When students are working on their own the instructor can work along with them. Students appreciate this and are less apt to view running and conditioning as drudgery or punishment. It alleviates teacher boredom, too. If you have several classes in a row, it is best to pace your energy.

The highlights of the conditioning program are field trips. The ski area used by Eastern Washington State College is a two-hour drive from campus. One Saturday the class is taken to the top of the ski run and then walks or jogs to the bottom. This downhill work is popular for two reasons: windedness is eliminated by not hiking up the hill, and the time required for the outing is cut in half. There is always, however, a marked increase in muscle soreness after this trip. Students need to be cautioned to pick their footing well and to stop when fatigued. Usually the day includes three runs down a mile-long slope. Again, moderate speed and careful footing are essential.

Eastern Washington State College is also fortunate to have a wildlife refuge nearby. Since most skiers love the outdoors, the

[8] Jack R. Leighton, *Progressive Weight Training* (New York: Ronald Press Co., 1961).

[9] Hayes, *Introduction to Teaching of Dance.*

students run three to five miles along a scenic path at the refuge two or three times per quarter. On a free-choice day, the students may swim, cycle, play handball, work in the gymnastics room, or rest. Since the students partially design their own programs, they are well aware of what is necessary to achieve the results they desire.

During each regular class day a new exercise with a direct relationship to skiing is introduced. To practice the line jump, for example, ski poles are set up to form a slalom course and students run it for time.[10] Ski magazines and newspapers often have unique exercises to help the student clarify his concept of the straight running position, jet turns, angulation, and other ski positions and techniques. Be sure to share your sources with the students.

In addition, part of the ski conditioning course includes caring for a skier's equipment. Knowing the correct way to sharpen edges, wax the skis (all skis need some wax), store equipment, and oil the bindings may make a day on the hill a little more enjoyable. The students need to realize that skis need a little maintenance work after they have been carried on the back of a car on rough, dirty roads and stored in a closet over the summer. A lesson in the adjustment technology of bindings is *not* recommended. None of us needs another liability worry. Boots, safety straps, and proper clothing need some comment. Knowledge of the chill factor, frostbite first aid, and a few safety and courtesy rules could certainly prevent an accident just as effectively as physical conditioning, and should be included.

Measurable Results

The students' performance is easily evaluated by comparing the results of the posttest to the pretest. Preset standards for grading are sometimes a problem. However, a 1½-mile run in 10 minutes, a 3-minute wall-sit, and a subjective rating of four (4) on the flexibility exercise form are currently used as the "excellent" standard in the grading system. A percentile ranking determines the remaining marks. In addition, a written exam is given.

Conclusion

Ski conditioning is neither an instant remedy for improving the condition of skiers, nor is it going to increase skill level to a large degree. Nevertheless, it can add safety and confidence to one's skiing and provide a lot more enjoyment through reducing fatigue and the aches and pains that often result from weekend skiing.

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[10] John Gillingham, "A Pre-Season and Year-Round Skiing Fitness Program," *JOHPER* 41:9 (Nov.-Dec. 1970).

Ski Conditioning for Competitors

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Experienced ski racers know that success in competition depends not only on skiing talent, but also on top physical conditioning. This kind of conditioning requires a year-round program. The main exercise period of the program should occur in the fall and lead into the racing season. During this period of intense training, racers should train hard with exercises specifically related to skiing. This article discusses some important guidelines for planning a fall conditioning program and includes some sample exercises. During the summer prior to the period of intense training, racers should take it upon themselves to participate in activities such as hiking, bicycling, tennis, or swimming in order to keep physically fit.

Planning a Fall Program

According to most sources, there are several elements of physical fitness to consider when conditioning for ski racing. *Endurance* is vital if the skier is to maintain top performance throughout a race, and then be ready to repeat that performance in a second run. If the racer is to turn properly and hold a good line at top speed, it is necessary to have *strength* and *power* in the legs and other muscles of the body. Making quick, rhythmical turns and overcoming unexpected moments of imbalance require fast reaction time. Good *coordination, agility,* and a good sense of *balance* are necessary for fast skiing over bumpy terrain. The racer also must have the *ability to relax* before, during, and after the race. Without the ability to relax, tension builds up, muscles become fatigued, and unnecessary energy is consumed.

Planning a Conditioning Program

The following are important suggestions when developing a conditioning program:

1. Consider the general fitness of your skiers and begin exercising at an appropriate pace. The exercises mentioned here are only suggestions and may need to be reduced or increased, depending upon the basic fitness of the skiers at the beginning of the fall training period.

2. Daily programs should be 1 to 1½ hours long and should consist of well-rounded exercises – for arms, legs, abdomen, back, shoulders, heart, and lungs.

Each day should include:

a. Warm-ups: stretching exercises
b. Main exercise period: strength and power, endurance, and flexibility exercises
c. Warm-down: relaxation, stretching exercises.

3. The weekly program should include three or four days of organized conditioning for the whole group of skiers. The program will be more fun if it includes a good variety of activities. On off days skiers should continue their training by bicycling, hiking, or circuit training.

4. As the season progresses, gradually increase the tempo of the conditioning exercises.

5. Stress proper clothing and shoes as both are important for efficient and safe activity.

6. Good physical conditioning requires, in addition to exercising, proper diet and sufficient rest.

7. Try to vary the exercise sequence so that an easier exercise follows a more strenuous one.

Sample Exercises for the Conditioning Program

Warm-ups. Spend at least 15 minutes on muscle warm-up before beginning the main part of the exercise session.

1. Effective stretching exercises can include:
   a. Stretch and bend from a standing position, feet apart
   b. Trunk twister
   c. Windmill or alternate toe touch
   d. Side bender standing erect with feet apart and hands clasped behind head.
2. Jog slowly with a loose, relaxed body for about five minutes or jump rope for five minutes.

Endurance Conditioning. Cardiovascular endurance is improved through two types of conditioning: 1) aerobic exercises to develop the body's ability to use oxygen, thus making it possible for the body to expend energy over an extended period of time; and 2) anaerobic exercises which condition the body for all-out physical effort in a short period of time. Both are important in ski race conditioning.

1. Aerobic exercises include:
   a. Distance running: Begin by running half mile and gradually increase to two miles, pacing the run slowly the first quarter of the distance and breathing deeply. Increase to a steady, faster pace with long strides and even breathing during the second and third quarters. Increase the pace the last quarter. The runner should be completely expended at the end of the distance.
   b. Skipping rope: Jump very fast for a designated number of sets – each set lasting two to four minutes. Vary the jumping pattern of the sets.
   c. Tandem run: Five joggers go at a steady pace, one behind the other with about 10 feet between them. The last one in line sprints and weaves between the others until he reaches the head of the line. Keep the line moving until all joggers have sprinted through the line a required number of times or until a time limit is up.
2. Anaerobic exercises include:
   a. Interval running: Alternate fast and slow running with rests of three to five minutes between sets. Begin interval exercising with three sets, each set equaling three repetitions of a 40-yard sprint and a 20-yard jog or walk. Gradually increase the number of sets or the number of repetitions in a set.
   b. Sprinting up slopes, jogging down: Perform in sets as with interval exercising. Use jumps and hops.

Strength and Power Exercises. An excellent method of developing muscle strength, power, and endurance is to set up a circuit training schedule. Select a variety of exercises specifically related to the muscle groups used in ski racing. Organize and conduct the circuit as follows:

1. Select five basic exercises, such as those shown on the sample circuit training score card in Figure 1.
2. Each racer does as many of each exercise as possible and records the number in the M (maximum) column. There should be sufficient rest between each exercise.
3. When all maximums are completed, divide each in half and record this score in the T (training) column. The circuit is now ready to begin.
4. The next day time each racer as he runs the circuit three times. Repeat each exercise the number of times recorded in the T column. Repeat the T column a second and third time without resting between sequences. At the completion of this procedure record the elapsed time on the card.
5. Repeat the circuit for eight days. Try to do it at least four times a week. Record the time once again on the eighth day to check for improvement.

Exercises	M	T	M	T	M	T
Sit-ups	24	12				
Squat thrust	10	5				
Push-ups	8	4				
Bench Jumps	35	18				
Pull-ups	6	3				
Date	Oct. 1	Oct. 2				
Time: Initial	15 min 32 sec					
Time: 8th day	12 min 24 sec					

Figure 1. Sample circuit training score card.

6. Make a new circuit by establishing new maximums. It is important when running a circuit to do the exercises quickly, but also properly. Don't get careless by rushing through the sequences.

7. Sample circuit training exercises follow:
   a. Sit-ups with knees bent and feet flat on the floor
   b. Squat thrusts
   c. Push-ups
   d. Bench jump: Stand on one side of a 10- or 12-inch bench and jump from one side to the other.
   e. Pull-ups from an overhead bar.

Flexibility Exercises. Perform these slowly and rhythmically. Avoid jerky movements.

1. Sit and bend: Sit with legs apart, touch head to one knee, then the other.

2. Overhead toe touch: From a supine position, raise lower part of body and touch toes behind head.

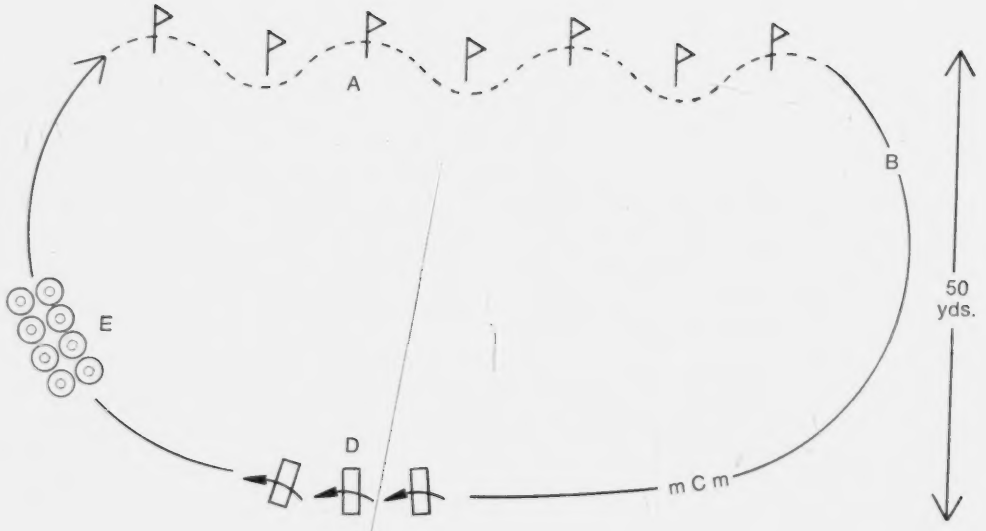

Figure 2. Sample outdoor obstacle course. Sprint between holes (A); leap frog with other racers (B); do forward or shoulder rolls (stand and jog a few steps between each roll) (C); jump over obstacles — hurdles, benches (D); run through tires, stepping into center of each (E).

3. Supine windmill: Perform slowly and smoothly.

Coordination, Agility, and Balance Exercises. These qualities can be developed through such activities as:

1. Slalom run: Set a series of slalom poles about 5 yards apart so that the racer will have to make quick changes of direction while sprinting across the field. Begin with 50-yard sprints and increase to 100 yards. Adding a second series of poles creates a good exercise for endurance training, coordination, agility, and balance.
2. Soccer, volleyball, trampolining, and tumbling: These provide a good overall workout and add variety to the conditioning program.
3. Jumping in the fall line: Use a short, moderately steep slope.
4. Relays: Good exercises include wheelbarrow, crab walk, seal walk, hops, jumps, skips, leaps, and rolls.
5. Obstacle course: Set the course using available equipment and leave space for jogging between each group of obstacles. Begin this exercise by running three sets. Each set equals twice around the course. Rest from three to five minutes between sets. (See Figure 2.) Indoor courses can be arranged in the gym using long benches, chairs, mats, parallel bars, a balance beam and a little imagination.

Relaxation Exercises. The exercise period should end with relaxation exercises to stretch the muscles. In addition to this important warm-down time, racers should understand the importance of relaxation before and during a race in order to eliminate unnecessary muscular tension.

1. Effective warm-down exercises include:
   a. Arm swings, leg swings, and head rolls
   b. Proper breathing throughout all exercises – do *not* hold breath.
   c. Walking and jogging interspersed with easy stretching exercises.

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Organization of College Ski Classes

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Many schools located reasonably near a ski area might consider including ski instruction in the physical education program. Other schools might be planning an expansion or some changes within their present ski instruction program. Hence, a glimpse of an established program might be helpful for those responsible for planning ski programs – even though each situation is unique.

Two systems of organization seem to be most common: 1) the ski area personnel operates the program with a faculty representative acting as liaison, or 2) the faculty person runs the entire program. There are several areas of concern common to each system. These include:

1. Instructional personnel
2. Training of instructors
3. Class organization
4. Program financing
5. Transportation

Since I have only worked in programs in which the faculty has been in charge, this discussion will be primarily limited to that viewpoint.

Instructional Personnel

Unless you are using a ski resort that draws large numbers to its ski school, the area's instructors will be mostly local people, including college students teaching on a part-time basis. If college students are to teach in the physical education program, the school program will be competing with the local area for the student-instructor.

Student-instructors teaching for both programs must understand that when they are hired to teach for the school on certain days, they are committed for the length of the program. Their first obligation is to the school program. Since student salaries are often limited by school policy, the school often cannot match the hourly rate paid by the ski area. The attraction is guaranteed week-day teaching. (In some area ski schools, the student's chance of employment may vary from week to week, depending upon the success of the school's promotion of lessons.)

Another attraction is the opportunity to teach college-age skiers as contrasted to children and/or housewives. After the first year, the proven instructor can move up to a more advanced class and get more skiing time for himself. The ultimate goal of most instructors in our program is to be assigned to one of the powder classes.

Training of Instructors

At the beginning of the college program, most of your student-instructors will be inexperienced. Training clinics should be a regular part of your program and should begin as soon as you can get on the snow. In our program, the applicants met two weeks before Christmas vacation. We explained the organization of the program and collected pertinent data about each applicant. Our first clinic on the hill was scheduled for the week-end before school resumed after the holidays. Former instructors needed to come only Sunday; new applicants came both Saturday and Sunday.

If a Divisional Pre-Exam Clinic was held on either of the following two week-ends, former student-instructors had the option of attending that clinic instead of our training session. In addition, there were short, on-the-hill clinics after ski classes were dismissed. These sessions were designed to share solutions to problems occurring in classes and occurred two or three times during the nine-week program.

We also offered a three-credit (quarter system) course for those interested in going on to certification. This can be a rich source of student-teachers for the physical education program. The faculty person responsible for the program could train the instructors. At first she might need help from additional sources, such as community people experienced in teaching skiing, or the ski area personnel. If your budget cannot absorb professionally acceptable fees, you may have to pass some of the cost along to the students – both the student-instructors and those eventually enrolling in the instructional program.

The instructor should become acquainted with ski instructor organizations. Each state that has ski resorts is in one of eight divisions of the Professional Ski Instructors of America (PSIA). These divisions include: Alaska, Far West, Pacific Northwest, Northern Rocky Mountain, Central, Eastern, Rocky Mountain, and Intermountain.

Each of these divisions is active in all phases of skiing and conducts several training clinics throughout the season. Often, provisions are made for guests, and they are allowed to participate during on-the-hill sessions. If necessary, take lessons yourself, read, listen, watch, take some more lessons, and practice, practice, practice. Then when you are ready, join your division and enroll in

one or more pre-exam clinics. Eventually, you should try to become certified. Information concerning the examination procedures can be obtained from each division.

Class Organization

Each program has factors determining the type of organization needed. Some system of student classification is needed for the first session on the hill. We ask our students to separate themselves into four major groups: "parking lot" beginners, snowplow beginners, intermediates, and parallel skiers.

The next step in classification takes place on the hill. Those in the intermediate group are organized into two parallel lines. The slope to be used can be negotiated in a steered turn or basic christy. At the bottom of that section of the hill are placed three slalom poles, each with a different color flag to indicate different skill levels. At each pole is a student-instructor. To be classified, each student skis between the parallel lines. His ski technique is analyzed by a faculty member and he is then assigned a color according to his level of skill. When the number of students in a group reaches 8 to 10, an assigned instructor takes the group aside and starts the first lesson.

An identical classification system is used with the snowplow beginners and the parallel skiers – on slopes equal to their abilities. There is no need to classify the parking lot beginners – all start out on the flat area.

At the end of the first session, the ski school staff meets to iron out immediate problems and to move any misclassified students. During the term, provisions are made to advance students who progress more rapidly than the rest of their class. This usually occurs to beginners between the third and fourth lessons due, in part, to extra practice on weekends.

Each lesson on the hill should allow some time for free skiing either before or after the lesson. In our program, classes are scheduled from 2:00 to 4:00 o'clock, and the tows may be used for free skiing from 1:00 to 2:00 and from 4:00 to 4:30.

A definite meeting place must be designated for classes, especially in a large area. If the number of classes on the hill at any one time is quite large, some system of dispersal must be used. The ski school director must be free to circulate among the classes during the instruction period; therefore, she should not teach a class herself. By spending some time with each class, she can spot the strengths and weaknesses of each instructor's methods, and suggestions can be made to help the student-instructors during the clinic sessions. The director can also help to keep classes moving smoothly, prevent problems from developing in student-teacher relationships, and assist an instructor in analyzing and correcting errors.

Program Financing

Few physical education departments have a budget large enough to cover the total cost of the program. The biggest expenditure is for lift fees. Students in the school program should not be charged the same price as recreational skiers. Many areas that offer lessons have a package plan to attract local skiers. This reduced lift rate should be reflected in the cost to the students.

Transportation

For years we used public transportation – everything from commercial bus lines, to old city transit busses, to renovated grade school busses. This cost was originally covered in a package fee, but many students objected to being forced to ride the busses and drove their own cars anyway. During the past two seasons there has been no transportation provided by the university, yet the students seem to have no trouble getting to the areas and the fee now charged does not include transportation.

Conclusion

There are many other administrative details too numerous to mention. Interested readers who have further questions concerning our program are invited to contact the writer.

Ski GLM — It's Here To Stay

KEN ZIMMERMAN

Ken Zimmerman is director of the Lake Eldora Ski School, Nederland, Colorado. He holds degrees in physical education from the University of Illinois and is a certified ski instructor, Professional Ski Instructors of America and the French Ski Federation.

The Graduated Length Method (GLM) of teaching skiing features the use of short skis for beginning skiers and involves an increase in ski length as the student improves.

Three types of students benefit from taking GLM lessions: the beginner, or one being reintroduced to the sport after a discouraging experience with the long ski snowplow system; the intermediate who wishes to break bad habits which impede his progress; and the advanced skier who wishes to learn uninhibited skiing.

GLM has these advantages for the student:

1. Physically, short skis are easier to handle, both on the snow and when transporting them from place to place. This often results in greater enjoyment for the beginner.
2. The cost of learning to ski is less when one considers the rapid progress made by the GLM beginning student.
3. More mobility through better control on short skis enables the student to explore different types of skiing terrain.

Different methods of teaching GLM have been developed. The radical method is the direct parallel approach. It involves starting beginners on three-foot skis and progressing them to four-, five-, and six-foot lengths. This method omits skiing with skis apart or using a snowplow. A series of exercises are introduced during the first lesson and are repeated with each graduation in ski length. This method seems to create a lot of enthusiasm in beginning skiers and is probably the most fun during the first one or two lessons. However, the ambitious skier who wishes to learn basic techniques which will aid him to become a good skier should know that this method fails as the ski length increases.

Technique-conscious individuals have developed a method called the Accelerated Teaching Method (ATM). This is conservative to the degree that the snowplow turn is still used in the early learning stage. Ski length is not as critical in ATM as it is in the direct parallel approach. The first skis utilized can be from four to five feet long and must be well engineered. Graduation in ski length is not forced. It is based on instructor recommendation and student preference.

The instruction method moves students quickly from the snowplow to wide track parallel (skis comfortably apart), which is a sound way to learn since most humans feel more stable with their feet spaced slightly apart.

The Short Ski Method used at Lake Eldora is closer to ATM than to direct parallel. It involves using the same selection criteria as ATM, but not as much conservatism in teaching. Steering is the main turning force and is started from a wide-track parallel stance. However, a snowplow stop is taught during the first lesson for safety. Steering is verbally cued simply by saying, "If you want your skis to go left, turn your feet in that direction." Students frequently prefer to steer only the outside ski to start the turn and then set the inside ski parallel when comfortably into the turn. This is similar to the ATM system. Sound teaching fundamentals and ability grouping are important to rapid learning. The more gifted students are given a chance to bypass any semblance of the snowplow turn by being exposed to the two-ski steered turn from a wide-track parallel stance.

The methods discussed in this article deal only with differences in the early stages of learning. Each method is designed to progress a student from a beginner to an advanced skier.

Ski schools in the United States will probably be advocating the use of short skis as a learning aid in the near future, although the method may vary. GLM is here to stay, and the main reason is the desire for fun and accomplishment when learning to ski.

Organize a Ski Touring Program

GAIL A. BIGGLESTONE

Gail Bigglestone is assistant professor, coordinator of the ski program, and coach of the women's ski team at the University of New Hampshire, Durham. Certified by the Professional Ski Instructors of America and the Canadian Ski Instructors Alliance, she is the DGWS representative to the United States Collegiate Sports Council Skiing Committee and chairman of the women's subcommittee on skiing.

Ski touring deserves a place in your physical education program. As one of the fastest growing sports in the country, ski touring is easy to learn, fun for the whole family, relatively inexpensive, and one of the best forms of exercise. For those interested in competition it is possible to progress quickly to the more advanced racing techniques of cross-county skiing.

Facilities

One of the attractive features of ski touring is that a successful program can be developed with limited facilities. Basic to the program, naturally, is snow but unlike downhill skiing, it is not vital to have hilly terrain. With any one or a combination of the following facilities you can begin touring classes.

1. Used equipment at ski sales
2. Army surplus skis cut down to touring width
3. A small moderate hill with a good outrun
4. A football stadium or park
5. Other vacant land near the school

For most instructional purposes a field with a small sloping area nearby provides an ideal setting. If a slope is not available it is possible to construct a small one of wood or have a few loads of dirt fill dumped and graded to meet your specifications. Indoor space should include areas for waxing and preparing skis, lecturing, dryland technique practice, and storage.

Equipment

To initiate a program you may want to "get things going" by supplying equipment to students. Although the equipment is

relatively inexpensive, students hesitate to purchase it until they have had a chance to participate in the activity. Equipment can be provided on a free basis or if a limited budget exists, a small fee may be charged for the course to cover minor repairs and breakage. With the growing popularity of touring, many students will have their own equipment. Therefore, 8 or 10 sets of equipment could be enough to get the program under way.

There are a variety of ways to purchase equipment, depending on your budget. Purchases might include:

1. Used equipment at ski sales
2. Arm surplus skis cut down to touring width
3. Equipment from ski manufacturers at school discount prices
4. Equipment from ski shops at school discount prices.

It is important to keep in mind the following facts when selecting equipment:

1. Purchase a variety of ski lengths depending on the age levels you are instructing.
2. Purchase good sturdy equipment that will stand up against use. This means choosing a ski that is built for touring and not a narrow, delicate racing ski.
3. Select boots and bindings that are interchangeable. In this way various sizes of boots may be switched to fit different ski lengths.
4. Select a variety of pole lengths.

Skis should be numbered and stored in a simple wooden rack. Use wooden pegs or nails to separate them. Stand skis on their tips on a surface which will allow water to drain through. Puddles caused by wet skis cause deterioration. Boards with carefully spaced cross-pieces to set skis on will eliminate this problem. Be sure skis are wiped off after use. Keep ski bottoms in repair with applications of a wood conditioner. This will keep the moisture out.

All boots should be numbered on the back of the heel and placed on easily accessible shelves. Boot trees that fit inside the boot are desirable, but if they are unavailable, stuff the boot with rolled up newspaper. Keep boots well polished and waterproofed.

Poles should be numbered by the pair and hung by the straps on nails or pegs. If splits appear in bamboo poles, tape them about every four inches.

Additional equipment and supplies include:

1. Benches or sawhorses to rest skis on when waxing
2. Newspapers to protect floors from wax
3. Old rags for removing wax from skis
4. A wax kit containing a variety of waxes, scrapers, corks, a torch, brushes or waxing iron attachments, matches, a wax chart, and a thermometer.

Course Content

The major objectives of the course are:

1. To enjoy the sport of ski touring
2. To understand selection and care of equipment
3. To gain a knowledge of basic technique and waxing.

Class organization for a seven- or eight-week period should include class meetings long enough to allow for proper preparation and return of equipment without having to rush or shorten the actual time spent on skis. Suggested class meeting times are two 1½-hour periods (most successful) or one 3-hour period a week.

Before class the instructor should set a track similar to Figure 1. The instructor can stand in the center to give individual instruction while the class practices in the appropriate areas.

Practice of basis techniques on the track should occur for only part of the class time; avoid getting bogged down with technique practice. Give the students just enough instruction to get them skiing, then take them off to enjoy touring through the woods or across the fields.

Course content should include:

1. Equipment
   a. Proper usage and care of equipment
   b. Selection of equipment
2. Techniques on the flat
   a. The stride: single pole (diagonal), double pole, and change-up

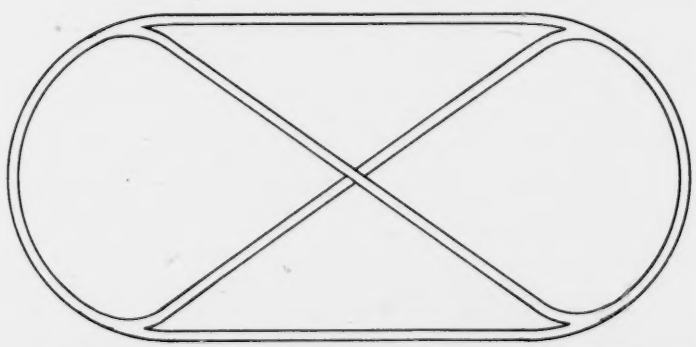

Figure 1. This prepared track provides space for instruction and practicing the double and single pole stride on the flat as well as techniques on the corners. For uphill and downhill instruction, place part of track on a very moderate slope with a straight outrun at the bottom.

b. Skating
c. Skating turn

3. Uphill techniques
   a. Sidestep
   b. Herringbone
   c. Traverse-sidestep
   d. Straight-up
4. Downhill techniques
   a. Straight running
   b. Stopping
   c. Step turn
   d. Snowplow turn
5. Waxing techniques
   a. Types of wax
   b. Base preparation
   c. Selecting and applying the proper wax
   d. Removing wax from skis
6. Conditioning
   a. General physical fitness
   b. Specific types of exercise

In addition, touring classes will be facilitated if the following information is made available for both students and instructors, and is posted in the waxing room or near the equipment room.

1. Equipment distribution–record the name of each student and the number of the pair of skis, boots, and poles that are assigned for the course.
2. Waxing information and charts–post general information on snow characteristics, temperatures, and types of waxes to be used.
3. Daily waxing information–post the temperature, snow conditions, and wax to be used each day of class.
4. Daily wax record–at the end of each class period record the temperature, snow condition, and type of wax used. Make comments as to the success of the choice of wax. This valuable record is best kept in a small notebook in the wax kit for future reference.

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Cross-Country — My Choice

ALISON OWEN

Alison Owen is a 1971 graduate of Eastmont High School, East Wenatchee, Washington. She was a competitor on the Junior National Relay team, which paved the way for world competition for women in this country. She was a member of the national team at the age of 15 and has competed on European tours, in FIS events, and in the 1972 Olympics.

Cross-country skiing is a test of mental discipline, strength, endurance, speed, coordination, and recovery. At the Winter Olympics in Japan, seven seconds separated the first four women finishers in the five-kilometer cross-country ski race (three miles of uphill, downhill, flats, and corners). Between third and fourth places there was one-tenth of a second! I emphasize – this is over three miles! The racers start 30 seconds apart so they never see much of their competition.

Cross-country ski racing for women in the United States is eight years old. I am credited with starting it by skiing on a boys' team in the 1965 Junior National Ski Championships. Four years later the first United States Women's team competed in the F.I.S. (World Ski Championships) in Czechoslovakia. Two years later our first cross-country women competed in the Olympics.

Since those first Junior Nationals eight years ago, my life has been directed toward skiing. The last two years have been almost totally skiing. School has been postponed and jobs have been few because of summer training camps and time needed for training everyday.

Progress is the key to my interest. It is so great to break personal records to meet goals, feel stronger, and have 10-mile runs come easier. When I was very young, my progress was easily visible. Now it comes more slowly and must be counted in seconds and tenths of seconds instead of minutes. Setting goals for myself has helped a lot. My last goal was the XIth Winter Olympics. I did not jump out of bed every morning for my usual five-mile run saying, "Boy, I'm going to make those Olympics." Training became my lifestyle and a way of self-expression.

Training for cross-country racing is the biggest part of the sport. I train nine months and race three months. I like to train or I would not compete in cross-country. The type of life I must live, and the things I must do for training–hike, bike, kayak, run, and compete in summer competitions for fun–make me feel healthy and happy both

mentally and physically. I also feel free from things like social problems and "pressure."

My training the last two years has become mostly a solo thing. The main reason for this is that it is easiest. Finding someone willing and able is a seldom thing.

In cross-country ski racing I see very little of my competition. I must find it within myself to go as fast as I can – all alone. For this to be physically possible for seven miles, a person must develop strong mental discipline and determination. Since I compete alone I find it best to train alone, to develop the power to push myself when by myself. It is great when I find someone who has been training – we talk about it and have a few good workouts. Yet I always go back to training alone because I somehow get more personal satisfaction. I often feel a need to be alone, to find things out about myself.

Spring and summer training for me consists of: running about 50 miles a week; biking about 60 miles a week; weight lifting on Monday, Wednesday, and Friday; and hiking or kayaking on the weekends. I also enter any track meets or bike races that I find, and play soccer or tennis when time and people permit.

In the fall training is intensified. This means two or three workouts, five days a week – a morning run (5 miles), weights three days a week, and then hill sprints using ski poles with intervals of about 10 minutes, or a distance run (10 miles).

Then snow comes! Skiing! Last year the United States Cross-Country Ski Team of 10 girls and one coach met in November to start skiing. We trained and raced together until the first of January. Then we had our six Olympic tryout races in Vermont and New Hampshire.

After living with the other nine girls for 2½ months, it was difficult to accept the fact that four of them would not reach their goal. Everyone had spent the last two years, at least, training with the Olympic team as a goal. One cannot easily describe the feeling of making that team. For me it was pure joy and gratitude. After making the team it was hard not to "let down," but our biggest challenge was still ahead. During the several weeks before going to Sapporo, we trained together and then were in Japan two weeks before our first race, the 10 kilometer. It takes quite a while to adjust to the 10-hour time change and different food. In the 10 kilometer race, I placed 35th in a field of 43, 4 minutes, 47 seconds behind the Russian winner. In the 5 kilometer race I was 1 minute, 54 seconds behind the same Russian winner to place 36th. I am not disappointed in these results. They show that I have a lot more training ahead if I want to be among the top – but the women who won are about 29, so I have 10 more years!

Medical Aspects of Skiing

MERRITT H. STILES, M.D.

Merritt H. Stiles of Spokane, Washington is past president of the U.S. Ski Association and former chairman of the U.S. Olympic Medical Services Committee.

Frostbite

Frostbite can be a serious problem, though rarely for Alpine skiers. The most common cold injury is superficial frostbite, or frostnip as it is often called. This develops principally in the exposed face, the cheeks, chin, or tip of the nose. It is unlikely to occur unless the temperature falls near zero degrees Fahrenheit. The chill factor brought on by rapid air motion, as with fast skiing or wind, increases the likelihood of cold injury. After an initial period of discomfort, often unnoticed, the tissues involved become white and lose sensation. Treatment is simple and consists of warming the frozen area as soon as possible. Cupping a hand over the frozen area or burying a frozen nose tip in a companion's axilla may be effective emergency treatment. When possible, it is best to go indoors.

The frostnip victim is usually unaware that he has gotten into trouble. It is particularly important not to ski alone in very cold weather since recognition of cold injury by a companion will lead to prompt treatment and avoidance of prolonged freezing with more serious tissue injury. If treatment is prompt, there are usually no aftereffects other than a little superficial blistering and possibly a local increased sensitivity to cold for a period of time.

While frostbite of the extremities would seem to be a likely development, it is rarely encountered in Alpine skiing other than in the devoutly careless or reckless skier who ignores the rules of ski safety and becomes lost for a prolonged period. The discomfort of cold hands and feet, and the interference with effective skiing, will usually send the skier indoors before frostbite has a chance to develop.

The most effective treatment for frostbite is, of course, prevention. Concentrate on lodge skiing if the temperature is below zero, particularly if there is a strong wind. Although the avid skier is not apt to stay indoors just because the weather is too cold, he may protect his face by wearing a knitted mask with eyeholes and an opening for the mouth and nostrils. The leather facial masks recently available presumably eliminate some of the discomforts of the knitted masks, and a vinyl-covered foam rubber thermoshield to cover both the face and neck is available and effective.

Skiing as a Therapeutic Tool

To some physicians, the most important health aspect of skiing is its usefulness as a therapeutic tool. The most serious health problem of the present generation is coronary heart disease, now the most frequent cause of death in the American male, and still increasing gradually in incidence. Many studies have been made on the factors involved in its development. The role of cholesterol and other fatty substances in coronary arteriosclerosis, a factor underlaying most heart attacks, is now almost as well known to the layman as to the scientist. The layman is generally not so familiar, however, with the studies which have related coronary heart disease to physical inactivity.

Review of records of the Health Insurance Plan of New York revealed heart attacks are less frequent in physically active persons than in those who led sedentary lives. If an attack did occur in the physically active group, it was much less likely to be fatal, and recovery was more rapid.

With the relationship noted between physical inactivity and coronary heart disease, it was not surprising that exercise programs were developed for use in the recovery phases following heart attacks. The reports on such programs, and reports on preventive programs, have been almost universally favorable. Controlled, graduated exercise has even been shown to be of benefit in angina pectoris, where physical activity generally induces cardiac pain.

The beneficial effects of exercise are not confined to the heart. The improved feeling of well-being from regular active exercise has long been known. Exercise is being increasingly recognized as an important factor in weight control. Many overweight individuals do very poorly on food restriction alone, but will lose steadily if adequate exercise is combined with an appropriate, and usually less rigid, restriction of food intake.

More and more physicians feel that active exercise is a must if an individual is to remain in optimum health and live life to the fullest. What type of exercise? The profession seems to be approaching general agreement that the most important forms of exercise are those which stress the heart and lungs. Most forms of calisthenics and many types of gymnasium activity are primarily muscle-building, and besides being boring, do little if anything for the cardiopulmonary system, which is most benefited when the body's largest muscle masses, the legs, are used vigorously. Walking, hiking, and climbing stairs are good preparatory exercises but are not vigorous enough for maximum benefit. Once the health-seeker has gotten into reasonable condition he should advance gradually to more vigorous activities. Skipping rope and running in place are excellent, but the scenery doesn't change much. Jogging and running

outdoors have more to offer, though complications may arise in settled neighborhoods.

Where does skiing fit in? It provides vigorous exercise of a truly beneficial type. It is sustained enough so that it may be an important factor in weight control. Even more important, it is fun. Once its joys have ensnared him, the skier's weary and often discouraging hours of practice seem but unimportant steps on his way to competence, and he happily turns to such substitute summer activities as jogging, swimming, cycling, or mountain climbing just to be in top condition when the first snowflakes fall.

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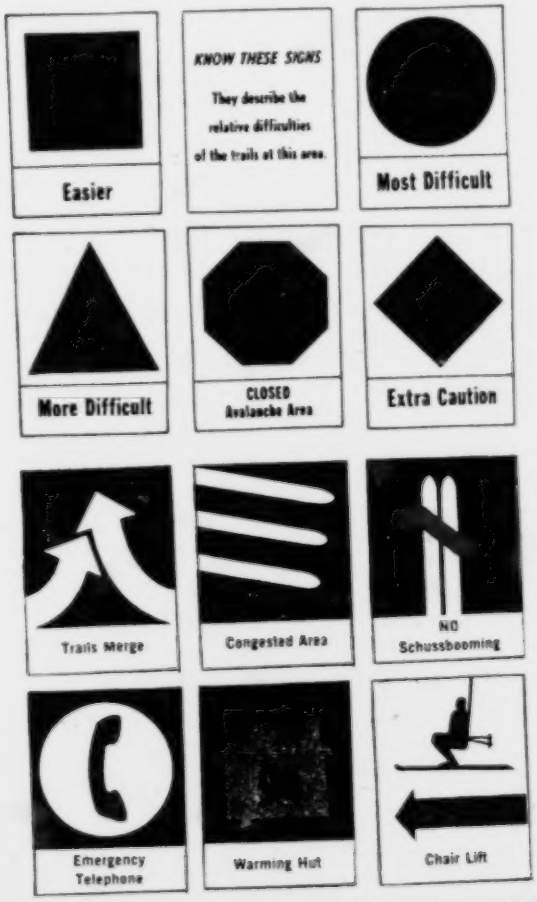

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WALLACE, WILLIAM N. *The Young Sportsman's Guide to Skiing.* Camden, N.J.: Thomas Nelson, Inc., 1968. Excellent guide for presenting the essential techniques of skiing simply and easily. Safety methods are clearly explained.

WITHERELL, WARREN. *How the Racers Ski.* New York: W.W. Norton, 1972. A revolutionary study of the fundamentals common to all great skiers – a new and more natural way to ski for competitors and recreational skiers.

Periodicals

Ski. $5/8 annual issues. Universal Publishing and Distributing Corp., 800 Second Ave., New York, N.Y. 10017.

Ski Racing. $4/25 annual issues. 1801 York, Denver, Colo. 80206.

Skier. $2/6 annual issues (Oct.-March). Eastern Amateur Ski Association, 20 Main St., Littleton, N.H. 03561.

Skiing. $3/7 annual issues (Sept.-March). Ziff-Davis Publishing Co., 1 Park Ave., New York, N.Y. 10016.

Snow. $4.50/7 annual issues. United States Ski Association, 1565 N. Woodward, Bloomfield Hills, Mich. 48013.

Divisions of the American Ski Association:

Alaskan Area
Box 4-2126
Anchorage, Alaska 99509

Central Area
P.O. Box 66014, AMS O'Hare
Chicago, Ill. 60666

Eastern Area
20 Main St.
Littleton, N.H. 03561

Far West Area
812 Howard
San Francisco, Calif. 94103

(Branch)
1313 W. 8th
Los Angeles, Calif. 90027

Intermountain Area
19 E. 2nd St.
Salt Lake City, Utah 84111

Northern Area
1111 N. 7th St.
Bozeman, Mont. 59715

Pacific Northwest
P.O. Box 6228
Seattle, Wash. 98188

Rocky Mountain Area
1463 Larimer
Denver, Colo. 80202

Southern Area
1271 Tedwell Dr.
Winston-Salem, N. C. 27103

Skiing Audiovisual Aids

Revised by **DORABETH PARSONS**
Eastern Washington State College
Cheney, Washington

JO WASHBURN
Washington State University
Pullman, Washington

Instruction

American Ski Technique. Sd., color (3).* Official instruction film from the Professional Ski Instructors of America.

The Austrian Technique. 16mm, sd., b&w, $10 (4). Demonstration of technique with progression from snowplow to Wedeln. Stop action and slow motion make this an excellent instruction film.

Clear the Tracks. 18 min., sd., color. Free loan (4). Three skiing starts demonstrate their skills and narrate. Fine powder and mogul skiing.

Ernie McCulloch Teaches Skiing. 16mm, 30 min., sd., b&w (6). Available to organizations as a moneymaking project. Rental based on membership. Arranged in three 30-minute parts for beginners, intermediates, and advanced. In this series Ernie McCulloch gives hints on selection of equipment; fundamentals of walking, climbing, and turning; and techniques of racing and slalom.

Filmstrip Series. 35mm, 33-1/3 rpm records, color or b&w. $56.25 with record, $48 without record (1). These filmstrips illustrate progressive ski skills of the American ski technique from beginning through advanced levels and gives tips on equipment and safety rules.

Learn to Ski. Sd., color. Sale $200 (8). Maury Flanagan gives lessons, and the film includes his comments and instructions as he performs each demonstration.

Making of a Skier. 15 min., sd., color. Sale $95 (2). Portrays the relevance of man's basic instincts versus learned techniques and the mental and motor adjustments necessary to successful skiing.

Man in Flight. 27½ min., color (4). The world's top ski jumpers perform sensationally during the 1969 competition in Europe.

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* *Numbers in ( ) refer to film distributors listed at end of article.*

Stop-action cameras and slow-motion photography reveal a new insight into this thrilling sport.

New England Powder. 16mm, 12 min., sd., color, $10 (7). Wedeln demonstrated in slow motion by the Sep Rusch ski instructors at Stowe, Vermont.

The New Othmar Schneider Ski Technique. 15 min., sd., color. Rental $10 (4). This film demonstrates the "nonrotation" technique. Beginners and experts will learn secrets of smooth, effortless skiing.

1972-73 U.S. Ski Team Physical Conditioning. 45 min., sd., color. Sale $125 from U.S. Ski Team Coaching Aids, 1726 Champa, Suite 300, Denver, Colo. 80202. Illustrates training routines used by U.S. Alpine Team. Members demonstrate as Schaeffler and Pederson narrate.

Rules of the Slopes. 20 min., color (4). A beautifully photographed film on the National Skier's courtesy code. Filmed in three of America's great ski areas, it features plenty of fine skiing plus some humorous sequences on how *not* to ski.

Ski the Outer Limits. 26 min., sd., color (3). An "involvement" film including instruction, powder, racing, tricks, and a great philosophy and score.

Ski Tricks. 15 min., sd., color. Rental $10 (4). Staub, Furrer, and Solberg perform stunts with slow- and stop-motion analysis.

Skiing a Go Go. 16mm, sd., color, $1.50 (4). Learning to ski by the French National Ski School System. Display of glacier skiing by two French instructors.

Skiing Loop Films. Super 8mm, color. Series of 12 loops. Sale $19.95 each loop (2). Part of the "Sports Techniques" Loop Film Library, the loops range from speed control to parallel turns and tricks. A loop film guide for instructor or student is included.

The Story of the Ski Patrol. 16mm, sd., color. Free loan from Schlitz Brewing Co., 235 W. Galena, Milwaukee, Wisc. 53212. Filmed at Vail and Winter Park. Depicts the work of the patrolman in promoting skiing safety and in providing first aid and rescue on the slopes.

The Subject was Skiing – The Story of 8th Interski. 28½ min., color (4). Every three years, representatives from the International Federation of Ski Instruction (Interski) meet to exchange views and ideas on teaching methods. Their 8th Congress was held in Aspen, Colorado and is thoroughly covered in this film. Ski instruction and performance is shown at its best.

Technique of Powder Snow Skiing. 15 min., sd., color. Rental $10 (4). Slow motion and stop action in two feet of powder.

The Technique of Short Skis. 16mm, 15 min., color, $10 (4). Shows techniques of the short ski in detail.

To Give Aid. 16mm, 25 min., sd., color. Available from National Ski Patrol System, 828 17th St., Denver, Colo. 80202. Rescue and first aid for simple fracture, severe bleeding, compound fracture of lower leg, back and neck injury, head injury, frostbite, shoulder dislocation, and loss of breathing. Covers rescue from approach to victim on hill to treatment in patrol room to loading into a car. Emphasis on hill first aid.

Vail Means Powder Snow. 15 min., sd., color. Rental $10 (4). Deep snow experts ski the back bowls of Vail. Their technique is shown in slow and stop motion.

Wedeln and Wedeln on One Ski. 16mm., 20 min., sd., b&w (5). The new technique in skiing, performed by Peter Estin at Sugar Bush Valley.

White Badge. 16mm, 20 min., color, $10 for U.S. Ski Team Fund (3). Developed for teaching skiers and instructors. Progresses through each stage of the American ski technique. Excellent.

The World Ski Technique. 16mm, 30 min., color, $10 for U.S. Ski Team Fund (4).

World Ski Techniques. 16mm, 45 min., sd., color (3).

Racing

Attack! — The Ski Racer. 26½ min., color (4). This is "the" film on ski racing. It shows what it takes to make a top world competition ski racer and shows the techniques of the world's best Alpine skiers through some of the most impressive ski action ever filmed.

Europe '69. . . . The U.S. Ski Team in Action. 26½ min., color (4). 1968 U.S. Ski Team Campaign in Europe prior to the Olympics. Includes Billy Kidd, Spider Sabich, Rick Chaffee, Kiki Cutter, Judy Nagel, and Jean-Claude Killy.

Modern Ski Racing Techniques. 15 min., sd.,m color. Rental $10 (4). Slow motion and stop action of Meyers, Huega, Kidd, Schranz, and others.

1972 Racing Highlights. 45 min., color, no sound but script included. Sale $120 from U.S. Ski Team Coaching Aids, 1726 Champa, Suite 300, Denver, Colo. 80202. Includes all medal winning runs in Sapporo. Excellent coaching aid.

Ski Racer. 16mm, sd., color, $5 (4). Ski racing is viewed through the eyes of the racer.

The Taste of Victory. 26½ min., color (4). The U.S. Ski Team takes on top European skiers on home ground at Aspen, Sun Valley, and Heavenly Valley. Here are the world's top skiers in action under pressure of the World Cup competition.

The Technique of Ski Racing. 16mm, 15 min., color, $10 (4). Views of the Nationals show champions such as Sailer, Werner, Reiler,

Allais, and Pravda at their best. Also featured are studies in slow motion, how to run gates, and how to prejump bumps.

Film Distributors

1. Association Films, 561 Hillgrove Ave., LaGrange, Ill. 60625.
2. Athletic Institute, 705 Merchandise Mart, Chicago, Ill. 60654.
3. Hart Ski Manufacturing Co. 630 Pierce Butler Rte., St. Paul, Minn. 55104.
4. Modern Talking Picture Service, 1212 Avenue of the Americas, New York, N.Y. 10036.
5. Specialty Importers, Inc., Box 27, Scarsdale, N.Y. 10583.
6. Storm Productions, Inc., 72 East Ave., Rochester, N.Y. 14604.
7. Vermont Development Commission, Montpelier, Vt. 05602.
8. Learning Systems, Div. of LSI Corp., 400 S. College Ave., Fort Collins, Colo. 80521.

Rules for Girls and Women's Ski Meets

Revised 1972

Meet Organization

A. *Race Committee.* The race committee is the governing body of the meet. This committee makes all arrangements for the conduct of the meet: receives entries; groups the racers; selects, approves, or changes the course; makes postponements; and appoints officials and all personnel otherwise prescribed. All decisions of the committee shall be made by majority vote. The chairman shall have no vote except in case of a tie. The committee is responsible for the computation and publication of the results. The race committee shall be composed of a chairman, referee, chief of course, and two members of the sponsoring organization.

B. *Protest Jury.* The protest jury shall meet on summons by the chairman of the race committee. The protest jury has final jurisdiction over all protests in all events. The protest jury shall consist of the chairman of the race committee, the referee, the chief of course, and two noninvolved members appointed by the chairman.

C. *Nontechnical Staff.* This staff shall be appointed or contacted by the chairman. It shall consist of medical personnel, representatives from the press, clerical help, and the personnel dealing with accommodations.

Race Officials

A. *Meet Director.* She shall ascertain that all the officials know their specific duties and duty locations throughout the meet. She shall supervise the draw, conduct a meeting of team representatives, and generally act as head official. The meet director shall usually be chairman of the race committee.

B. *Referee.* She shall be responsible for announcing or making known to the competitors any special conditions imposed by the race committee, or interpretations on situations not specifically covered by the rules. She may: approve a substitute for a particular event; replace officials who prove to be unqualified; and admonish any team or contestant who does not follow the

racing rules or who refuses to follow the rules of the officials. She shall be appointed by the race committee and be impartial to the interests of any team.

C. *Chief of Course.* She shall have charge of, and assign duties to, those individuals connected with the course such as: course setters, gatekeepers, forerunners, and ski patrol. She shall be responsible for laying out the course and placing control gates on the slope approved by the race committee, relative to the safety of the contestants and the intent of the race. She is responsible for the preparation and maintenance of the course both before and during the race. If, in her opinion, the course for any race is unsafe to run, she shall have the authority to postpone the race or alter the course.

D. *Chief Timer.* She is responsible for all phases of timing from the start to the finish and the calculation of elapsed time. She is responsible for the assignment of duties to those individuals concerned with timing, such as the chief starter, judge of finish, timers (at least two in addition to the chief timer), recorders, calculators, and communications personnel. It is her duty to see that the watches are regulated and synchronized and times properly recorded.

E. *Starter.* She shall be responsible for the starting list and the proper use of warning and starting signals. She shall be responsible for the assistant starter, who sees that the contestants are at the starting line in their proper order and in ample time. Unless electrical timing is used, the assistant starter shall serve as false start judge.

F. *Recorders.* There shall be a recorder for each timer. The recorders working with the timers and judge of the finish (who identifies the contestant and her finish) are responsible for recording the finishing times of each racer as given to her by the timers. She shall repeat back to the timer the time given to her in order to avoid errors.

G. *Chief Gatekeeper.* She shall be responsible for all gatekeepers, training them in their duties, if necessary. She shall assign them to their stations. At the completion of the race she shall pick up the penalty cards from each gatekeeper, turning these in to the referee within 15 minutes of the conclusion of the race. (If there are disqualifications, the gatekeeper reports in person with the chief gatekeeper to the referee). The race may not start until the chief gatekeeper indicates to the chief timer that the gatekeepers are properly posted.

H. *Gatekeeper.* She shall be responsible for no more than four gates which she must be able to maintain. She must know the rules of competition and be in a position to clearly observe these gates to such an extent that there is no question as to whether a contestant passed properly through a gate. Her jurisdiction begins when the contestant passes through the last gate above the highest gate which she is controlling and terminates when the racer passes through the last gate she controls.

Proper passings through a gate require that both feet cross the line between the poles of the gate. A racer is disqualified if she fails to pass through. She is permitted to pass this imaginary line in either direction, even by moving backwards.

A gatekeeper may speak to a contestant only after the contestant has spoken to her. The gatekeeper may reply one of two things: "Go on" or "Back," whichever is appropriate to the situation.

At the conclusion of the race the gatekeeper remains at her post until the chief gatekeeper picks up her penalty cards. If she has recorded a disqualification, she must accompany the chief gatekeeper and report the exact circumstances to the referee.

I. *Ski Patrol.* An adequate ski patrol and first aid service shall be available.

General Competitive Rules

A. *Participants.* Participants must meet the standards and regulations of the schools, clubs, and leagues in which they are competing. They shall know and agree to abide by the rules. Contestants shall use safety straps and headqear as specified by the event.

B. *The Draw.* The coach shall submit the starting order of her team (each event) to the race committee. The names of the team are drawn by lot. The coach has the option of passing any round if the team is below maximum. The race committee may choose to draw for each seed in each event. The method to be used shall be announced prior to the draw.

C. *The Start.* Each racer shall be given a 30-second and a 10-second warning. The next warning is 5 seconds before the start, and the starter shall use the words "five, four, three, two, one, go."

The racer must have the toe of one boot at the starting line. The ski poles shall be in front of the starting gate, planted in the snow. A running start will not be allowed.

With hand timing, if the toe of either boot crosses the starting line prior to the word "go," a false start is ruled. The

racer who make a false start shall be disqualified unless she returns to the starting position upon command of the starter. The clock continues to run.

With electrical timing, the racer will start at the start signal. The time of start will be valid if it is between 3 seconds before and 3 seconds after the official starting time. The racer who crosses the starting line more than 3 seconds prior to the official starting time shall be disqualified.

D. *The Finish.* The racer must finish the race on at least one ski. Both feet must cross the finish line. Time is taken when both feet have crossed the line (manual timing) or the contact is broken (electrical timing).

Timing

A. *Equipment.* Watches used should record the 10th of a second. If two watches are used, the average of the two times shall be the official time. If three watches are used and two agree, that time shall be official. If three watches disagree, the intermediate time shall be official.

Electrical timing may be used, although hand timing should be used in conjunction. If the electrical timing breaks down, all times taken by hand shall be official.

B. *Recording.* In the Alpine events times are recorded to the nearest 10th of a second (hand timing) or 100th of a second (electric timing). Cross-country is recorded to the nearest full second.

Slalom

A. Specifications

1. Flags
   a. Red and blue flags must be used.
   b. Colors must alternate on successive gates.
   c. The flags shall be a minimum of 12 inches square.
2. Poles
   a. Poles should be painted red and blue.
   b. Poles shall average 1 inch in diameter and shall extend at least 6 feet above the snow.
3. Gates
   a. Gates shall be numbered, starting at the top of the course.
   b. All gates shall be 14 feet wide.
   c. The distance from one gate to another shall be no less than 2½ feet.
   d. The starting gate shall measure 2½ feet across.

e. Gate positions should be marked by colored dye.

4. The Course
   a. The course should be set to allow a minimum of 2 hours for inspection.
   b. The course should consist of 30-40 gates.
   c. The course should be set on hard-packed snow, or salted during preparation.
5. Forerunners
   a. There shall be a minimum of one and a maximum of two forerunners before the first run.
   b. There shall be one forerunner prior to the second run if the course is the same.
   c. There shall be two forerunners prior to the second run if a new course has been set.
   d. Times of forerunners will not be announced.
6. Safety
   a. Safety straps are required.
   b. No racer shall start until the preceding racer finishes or indicates "no finish."

B. Competition
1. Running order and seed
   a. There shall be two runs of the slalom unless conditions do not permit.
   b. The running order shall be reversed within each seed for the second run.
2. Disqualification. The racer will be disqualified:
   a. If she is late to the start.
   b. If she false starts (electrical timing).
   c. If she does not complete the course and finish on at least one ski.
   d. If she brakes with her poles.
   e. If she receives assistance.
   f. If she does not legally pass through all gates.
   g. If she fails to cross the finish line with both feet.
   h. If she shadows the course or passes through a gate while descending the hill (unless requested to side slip by the proper official).

Giant Slalom

A. Specifications
1. Flags
   a. Red and blue flags must be used.
   b. Colors must alternate on successive gates.
   c. The flags shall be a minimum of 23 x 30 inches.

2. Poles
   a. The poles may be of the same dimension as those used in slalom.
   b. Double pole gates are to be used in giant slalom.
3. Gates
   a. The gates shall be numbered, starting at the top.
   b. The gates shall be between 13 and 26 feet wide.
   c. The distance from one gate to another (nearest poles) shall be at least 16½ feet.
   d. Gate positions should be marked by colored dye.
4. The Course
   a. The course shall consist of 20-30 double pole gates.
   b. The actual course shall be set to allow a minimum of 2 hours of inspection.
5. Forerunners
   a. One or two forerunners shall run the course prior to the first run.
   b. Should a second run be held, one forerunner shall run the course.
   c. Times of forerunners will not be announced.
6. Safety
   a. Safety straps are required.
   b. Single impact headgear is required during both training and the race. The helmet must meet Snell requirements.
   c. There shall be at least a 60-second interval between the starting of each racer.

B. Competition
1. Running order and seed
   a. There may be one or two runs of the giant slalom. This decision is made and announced by the race committee.
   b. If a second run is held, the running order shall be reversed within each seed.
2. Disqualification. The racer will be disqualified:
   a. If she is late to the start.
   b. If she false starts (electrical timing).
   c. If she does not complete the course and finish on at least one ski.
   d. If she receives assistance.
   e. If she fails to give way to an overtaking racer on first demand.
   f. If she does not legally pass through all the gates.
   g. If she fails to cross the finish line with both feet.
   h. If she shadows the course or passes through a gate while descending the hill (unless requested to side slip by the proper official).

Downhill

A. Specifications
   1. Flags
      a. Red and blue flags must be used.
      b. Colors must alternate on successive gates.
      c. The flags shall be a minimum of 26 x 36 inches.
      d. The course shall be marked by red directional flags on the left (facing downhill).
   2. Poles
      a. The poles may be of the same dimension as those used in slalom.
      b. Double pole gates are to be used in downhill.
   3. Gates
      a. The gates shall be numbered, starting at the top.
      b. The gates shall be a minimum of 24 feet wide.
      c. Flags of a gate shall face in one direction and be as close as possible at right angles to the racing line.
      d. Technical slalom figures shall not be used.
   4. The Course
      a. The course should not include bumps or ledges to cause competitors to become airborn for long distances.
      b. The course should not include convex outward curves or extreme narrow sections.
      c. The course itself should be free from hazards such as trees and rocks.
      d. The use of control gates should be used to check extreme speed and to keep racers away from obstacles.
      e. The course should always be selected and set with the level of the competitor uppermost in mind.
   5. Forerunners
      a. One of two forerunners shall run the course prior to the first racer.
      b. Times of forerunners will not be announced.
   6. Safety
      a. Safety straps are required.
      b. Single impact headgear is required during both training and the race. The helmet must meet Snell requirements.
      c. Off-the-course obstacles should be screened by snow walls or safety nets.
      d. Starting times should be selected to allow for greatest visibility.
      e. A level and unobstructed run-out should be provided at the finish.
      f. The course must be open for at least one day of training prior to the race.

g. Racers must engage in a nonstop run prior to the race.
h. There shall be at least a 60-second interval between the starting of each racer.

B. Competition
1. Running order
a. There will be one run of the downhill.
b. Running order is determined by the draw.
2. Disqualification. The racer will be disqualified:
a. If she is late to the start.
b. If she false starts (electrical timing).
c. If she does not complete the course and finish on at least one ski.
d. If she receives assistance.
e. If she fails to give way to an overtaking racer on first demand.
f. If she does not legally pass through all gates.
g. If she fails to cross the finish line with both feet.
h. If she fails to take a nonstop training run.

Cross-Country

A. Specifications
1. Start and finish
a. Start and finish are ideally at the same place.
b. They should be on level ground.
2. Markings
a. The course should be marked with red or fluorescent orange streamers.
b. The course should be well marked at turns, junctions, forks, or cross trails. (A checker may be needed at confusing points).
3. The Course
a. The course may be 3, 5, or 10 kilometers.
b. The course should contain equal portions of uphill, downhill, and level terrain. (The first section should be relatively easy; the hardest section should occur about halfway).
c. A loop that can be run twice is recommended.
d. The course shall be open for training prior to the race.
4. Forerunners and postrunners
a. No less than two forerunners should be sent out. They should return to the start before the first racer is started.
b. In the event of fresh snow more forerunners will be needed.
c. The postrunner leaves after the last racer has started. The

postrunner notifies the checkers they may leave their posts. She never passes a competitor.

5. Checkers
   a. They check off all competitors as they go by. Checkers are at intersections where markings alone may be insufficient to indicate proper direction.
   b. The head checker trains, assigns, and is responsible for all checkers.

B. Competition
   1. Starting
      a. Racers start according to the draw.
      b. Racers may start at 30- or 60-second intervals.
      c. Each ski will be marked by an official with waterproof paint.
      d. In starting position the competitor may move her feet in the gate; however, a running start is illegal. Both feet must be behind the line on the signal "go."
      e. Once the starting list is drawn, the starting times for each competitor are final. If a competitor withdraws before the race, her start time will remain, rather than substitute another competitor at that time.
      f. In the event a competitor arrives late for the start, she leaves upon arrival, but her time is determined from the original starting list.
   2. Race Procedure
      a. Each competitor must follow the flagged track and pass all control points. She may use no form of propulsion other than skis and poles, nor make use of any kinds of assistance including pacemarkers in front of, beside, or behind her. The course must be accomplished on skis.
      b. If a ski breaks the competitor may receive another with binding. She must finish with at least one of her original skies. Broken poles may be replaced. A competitor is permitted to wax her skis and repair equipment without assistance. She has the right to make use of a waxing iron or equivalent for waxing even though kindled by another person, and to receive and use wax which is given to her. She is permitted to take refreshment, either her own or supplied.
      c. A competitor who falls out of the race must inform the nearest official as soon as possible, preferably the officials at the finish.
      d. The competitor is not permitted to leave the track any more than 5 feet on either side unless danger dictates a

greater distance, and then no more than 9 feet on either side.

3. Timing
   a. The time shall be computed to the nearest second. Clocks with hour, minute, and sweep second hands should be used. Watches are held by the starter and timers. These should be synchronized before the race and compared afterward.
   b. Competitors are started with the starter's watch in accordance with the times shown on the running order and timed at the finish line by the timer's watch. The competitor's time is the difference between the time shown for her departure on the official running order and her recorded time of finish.
4. Disqualification. The racer is disqualified:
   a. If she does not follow the marked track or pass all checkpoints.
   b. If she fails to clear track to an overtaking competitor on first demand.
   c. If she does not finish on at least one original ski.
   d. If she receives illegal assistance.

Protest and Appeals

A. *Protests.* All protests by participants or teams must be reported to the race committee in writing within 2 hours. In the case of a protest against the decision of a gatekeeper, the protest must be made to the referee within 10 minutes after announcement of the decision. (The burden of proof shall rest on the participant). All disqualifications should be posted immediately after the event.

Decisions on protests are made by the protest jury. The referee should call together those officials deemed necessary. Decisions by the protest jury are final.

A protest based on an alleged clerical error in calculating results must be filed before the race committee disbands. If such an error has been committed, corrected results shall be published.

B. *Appeals.* A competitor in Alpine events may appeal to the referee upon interference or an error by an official. If unable to make a decision at the time of the appeal, the referee may grant an immediate rerun. If the time of the rerun is slower than that of the original run, the time is official. If the rerun time is better than the original time, the race committee decides which is the original time when considering the appeal.

The participant in cross-country who suffers from interference has no basis for appeal.

Computation of Results

A. *Team Scoring.* Results shall be determined by the times of the team members, excluding those who have been disqualified. The team time shall be the sum of the times posted by the team's top three finishers. The team score shall be 100 multiplied by the sum of the best three times in the event, divided by the team time.
Example:

$$\frac{\text{100 x sum of 3 best times in event}}{\text{team time}} = \text{team score}$$

B. *Incomplete Teams.* Teams that fail to have three racers complete the race through accident or disqualification shall have team scores computed in the following manner:
   1. One finisher – the team time shall be the single finisher's time multiplied by 9.
   2. Two finishers – the team time shall be the sum of the two racers' times multiplied by 2.25.

C. *Skimeister Award.* This award may be made by computing individual scores. Individual scores for all events are added together.
Example:

$$\frac{\text{100 x best time in event}}{\text{Individual's time}} = \text{Individual Score}$$

D. *Meet Scores.* The final standing of teams shall be the sum of the team scores for all events, carried to the nearest 10th.

HELP WANTED

Name_____

Address_____

_____

Position — Responsibility & Age Group

- ☐ Physical Education Instructor _____
- ☐ Recreation Leader _____
- ☐ Student _____
- ☐ Coach _____
- ☐ Other _____

A. Please indicate your use of the Winter Sports Section by circling.

	Articles	Rules	A-V Aids	Bibliography
Teaching	Ski	Ski	Ski	Ski
	Skate		Skate	Skate
Coaching	Ski	Ski	Ski	Ski
	Skate		Skate	Skate
Administration of Meets	Ski	Ski	Ski	Ski
	Skate		Skate	Skate
Student Assignments	Ski	Ski	Ski	Ski
	Skate		Skate	Skate
Program Ideas	Ski	Ski	Ski	Ski
	Skate		Skate	Skate

B. Please indicate the importance of content to you by a √.

	Very Important	Important	Sometimes Useful	Indifferent	Of No Value
Articles					
Ski					
Skate					
Audiovisual Aids					
Ski					
Skate					
Bibliography					
Ski					
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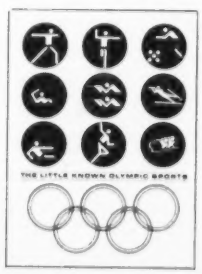

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